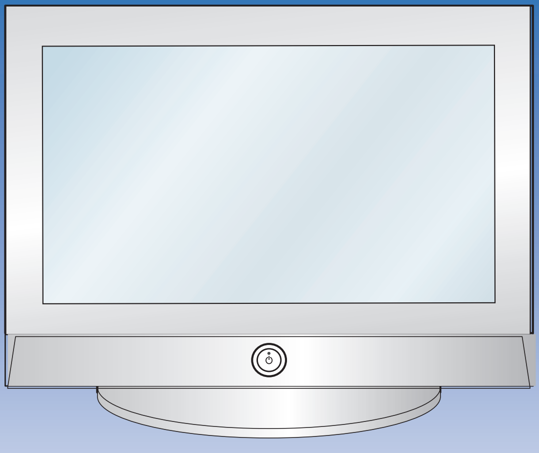
PLASMA DISPLAY TV

Chassis : D72A(P) Puccini_42D5
Model : PS42D51SX/XEC

SERVICE Manual

PLASMA DISPLAY TV



PS-42D5S

FEATURES

- DTV Ready PDP TV
- 2 Way 4 Speakers
- 1 HDMI input
- Slim line design
- Energy Saving
- 12 Bit image processing
  (687 billion color)

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1. Precaution

To avoid possible damages or electric shocks or exposure to radiation, follow the instructions below with regard to safety, installation, service and ESD.

1-1 Safety Precautions

1. Make sure all protective devices are properly installed including non-metallic handles and compartment covers when installing or re-installing the chassis or chassis assemblies.

2. Make sure that no gaps exist between the cabinets for children to insert their fingers in to prevent children from receiving electric shocks. Gaps mentioned above include ventilation holes of a too great magnitude between the PDP module and the cabinet mask, and the improper installation of the rear cabinet.

   Errors may occur when the resistance is below 1.0 MΩ or over 5.2 MΩ.
   In these cases, make sure that the device is repaired before sending it back to the customer.

3. Check for Electricity Leakage (Figure 1-1)
   Warning: Do not use an insulated transformer for checking the leakage. Use only those current leakage testers or mirroring systems that comply with ANSIC 101.1 and the Underwriter Laboratory's specifications (UL1410, 59.7).

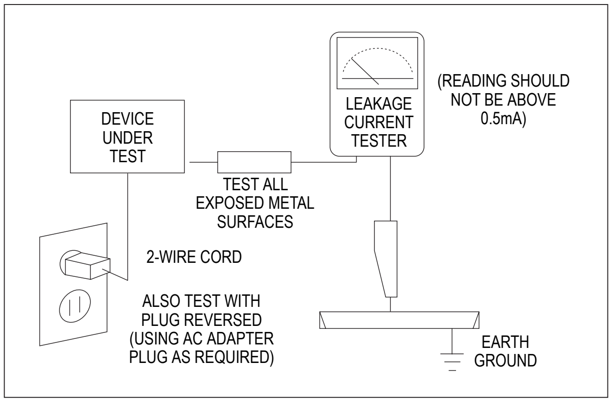

DEVICE UNDER TEST
LEAKAGE CURRENT TESTER
(READING SHOULD NOT BE ABOVE 0.5mA)
TEST ALL EXPOSED METAL SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Fig. 1-1 AC Leakage Test

4. A high voltage is maintained within the specified limits using safety parts, calibration and tolerances. When voltage exceeds the specified limits, check each special part.

5. Warning for Engineering Changes:
   Never make any changes or additions to the circuit design or the internal part for this product.
   Ex: Do not add any audio or video accessory connectors. This might cause physical damage.
   Furthermore, any changes or additions to the original design/engineering will invalidate the warranty.

6. Warning - Hot Chassis:
   Some TV chassis are directly connected to one end of the AC power cord for electrical reasons.
   Without insulated transformers, the product can only be repaired safely when the chassis is connected to the earthed end of the AC power source.

   To make sure the AC power cord is properly connected, follow the instructions below. Use the voltmeter to measure the voltage between the chassis and the earthed ground. If the measurement is over 1.0V, unplug the AC power cord and change the polarity before re-inserting it. Measure the voltage between the chassis and the ground again.

7. Some TV chassis are shipped with an additional secondary grounding system. The secondary system is adjacent to the AC power line. These two grounding systems are separated in the circuit using an unbreakable/unchangeable insulation material.

8. When any parts, material or wiring appear overheated or damaged, replace them with new regular ones immediately. When any damage or overheating is detected, correct this immediately and make a regular check of possible errors.

9. Check for the original shape of the lead, especially that of the antenna wiring, any sharp edges, the AC power and the high voltage power. Carefully check if the wiring is too tight, incorrectly placed or loose. Never change the space between the part and the printed circuit board. Check the AC power cord for possible damages. Keep the part or the lead away from any heat-emitting materials.

10. Safety Indication:
    Some electrical circuits or device related materials require special attention to their safety features, which cannot be viewed by the naked eye. If an original part is replaced with another irregular one, the safety or protective features will be lost even if the new one has a higher voltage or more watts.

    Critical safety parts should be bracketed with (⚡ ⚠). Use only regular parts for replacements (in particular, flame resistance and dielectric strength specifications). Irregular parts or materials may cause electric shock or fire.

1-2 Servicing Precautions

Warning 1: First carefully read the "Safety Instruction" in this service manual.
When there is a conflict between the service and the safety instructions, follow the safety instruction at all times.

Warning 2: Any electrolytic capacitor with the wrong polarity will explode.

1. The service instructions are printed on the cabinet, and should be followed by any service personnel.

2. Make sure to unplug the AC power cord from the power source before starting any repairs.
   (a) Remove or re-install parts or assemblies.
   (b) Disconnect the electric plug or connector, if any.
   (c) Connect the test part in parallel with the electrolytic capacitor.

3. Some parts are placed at a higher position than the printed board. Insulated tubes or tapes are used for this purpose. The internal wiring is clamped using buckles to avoid contact with heat emitting parts. These parts are installed back to their original position.

4. After the repair, make sure to check if the screws, parts or cables are properly installed. Make sure no damage is caused to the repaired part and its surroundings.

5. Check for insulation between the blade of the AC plug and that of any conductive materials (i.e. the metal panel, input terminal, earphone jack, etc).

6. Insulation Check Process: Unplug the power cord from the AC source and turn the switch on. Connect the insulating resistance meter (500v) to the AC plug blade.

   The insulating resistance between the blade of the AC plug and that of the conductive material should be more than 1 MΩ.

7. Any B+ interlock should not be damaged.
   If the metal heat sink is not properly installed, no connection to the AC power should be made.

8. Make sure the grounding lead of the tester is connected to the chassis ground before connecting to the positive lead. The ground lead of the tester should be removed last.

9. Beware of risks of any current leakage coming into contact with the high-capacity capacitor.

10. The sharp edges of the metal material may cause physical damage, so ensure wearing protective gloves during the repair.

11. Due to the nature of plasma display panels, partial after-images may appear if a still picture is displayed on the screen for a long period of time.
    This is caused by brightness deterioration due to the storage effect of the panel, and to prevent this from happening, we recommend that the brightness and contrast are reduced.
    (e.g.) Contrast: 25, Brightness: 50

1-3 Static Electricity Precautions

1. Some semi-conductive ("solid state") devices are vulnerable to static electricity. These devices are known as ESD. ESD includes the integrated circuit and the field effect transistor. To avoid any materials damage from electrostatic shock, follow the instructions described below.

2. Remove any static electricity from your body by connecting the earth ground before handling any semi-conductive parts or ass'ys. Alternatively, wear a dischargeable wrist-belt.
   (Make sure to remove any static electricity before connecting the power source - this is a safety instruction for avoiding electric shock)

3. Remove the ESD ass'y and place it on a conductive surface such as aluminum foil to prevent accumulating static electricity.

4. Do not use any Freon-based chemicals.
   Such chemicals will generate static electricity that causes damage to the ESD.

5. Use only grounded-tip irons for soldering purposes.

6. Use only anti-static solder removal devices.
   Most solder removal devices do not support an anti-static feature. A solder removal device without an anti-static feature can store enough static electricity to cause damage to the ESD.

7. Do not remove the ESD from the protective box until the replacement is ready. Most ESD replacements are covered with lead, which will cause a short to the entire unit due to the conductive foam, aluminum foil or other conductive materials.

8. Remove the protective material from the ESD replacement lead immediately after connecting it to the chassis or circuit ass'y.

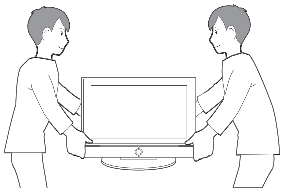
9. Take extreme caution in handling any uncovered ESD replacements. Actions such as brushing clothes or lifting your leg from the carpet floor can generate enough static electricity to damage the ESD.

CAUTION

These servicing instructions are for use by qualified service personnel only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

1-4 Installation Precautions

1. For safety reasons, more than two people are required for carrying the product.



2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.

3. Do not place the product in areas with poor ventilation such as a bookshelf or closet. The increased internal temperature may cause fire.

4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.

5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.

6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the high-voltage cable or the antenna falling over may cause fire or electric shock.

7. When connecting the RF antenna, check for a DTV receiving system and install a separate DTV reception antenna for areas with no DTV signal.

8. When installing the product, leave enough space (4") between the product and the wall for ventilation purposes.
   A rise in temperature within the product may cause fire.

9. When moving a PDP with removable speakers, detach the speakers first before moving the main body.
   Moving the PDP main body without separating the speakers may cause the speakers to detach, possibly causing damage or injury.

MEMO

2. Product Specification

2-1 Product Features

Block	Specfication	Major IC	Remark
RF	Tuner	BN40-00038A / TMQ76-701A (ALPS)	
Power	Input Voltage : AC 100-240V~, 60Hz Stand-By : 3W less		
Video	Scaler	SVP-EX62	(Trident)
	Sub Decoder	SAA7119	(Philips)
	Picture Enhance	DNIe-Lite	(Samsung)
	Video S/W	TEA6425*2	
	Component S/W	-	
	HDMI	Sii9993	(Silicon Image)
Sound	Sound Processor	MSP4410G	(Micronas)
	Sound Control	NSP6241A	
	Audio S/W	TEA6422*2	
	Sound Amp	TAS5122	
	Sound Output	15W+15W	
Control	CPU	M30620	(Renesas)
	Sub Micom	3F8668	(Samsung)
Remocon	TM76		
etc.	Cabinet	P5	
	Product Model	PL42P5H	
	Module	V4 42" HD	

■ Chip Description

- SVP-EX62 : 480i/576i, CVBS, Y/C, HDMI, PC input Video signal processing
- SAA7119 : CVBS, Y/C Sub Video signal , Scart RGB signal processing
- DNIe-Lite : Image Enhancer
- Sii9993 : HDMI signal receiver
- MSP4410G : SIF, Analog Audio Decoder
- NSP6241A : Sound Output Control
- TAS5122 : Sound Amp
- M30620 : Main Micom
- 3F8668 : Sub Micom

2-2 Key Features

Model		PL-42P5H
Dimensions	Display	41.7(W) x 29.1(H) x 3.88 (D) inches (Without Stand)
		41.7(W) x 30.7(H) x 13.4 (D) inches (With Stand)
Weight	Display	35.4 Kg / 78.04 lbs (Without Stand)
		40.1 Kg / 88.40 lbs (With Stand)
Voltage		AC 100-240V~, 60Hz /AC 100-240V~, 60Hz (Mexico only)
Power Consumption		380 W
Number of Pixels		1024 (H) X 768 (V)
Screen Size		42 inches
ANTENNA input		ANT IN ※ 75Ω unbalanced
VIDEO input		AV S-VIDEO COMPONENT1 - 480i,P/576i,P/720P/1080i COMPONENT2 - 480i,P/576i,P/720P/1080i PC HDMI (DVI Compatible)
AUDIO input		AV S-VIDEO COMPONENT1 - 480i,P/576i,P/720P/1080i COMPONENT2 - 480i,P/576i,P/720P/1080i PC DVI
Sound Output		AUDIO (L/R)

■ H/W Configuration
- Video : SVP-EX62, TEA6425, BA7657F, DNIe-L
- Sound : MSP4440G, NSP6241A, TAS5122
- Tuner : TMQZ6-511A

■ S/W Configuration
- SVP-EX62 Trident Chip Control , DNIe-L
- CPU Master Control + Sub Micom, TTX Software
- Favorite CH, Label CH

■ Picture
- System : Video → PAL/SECAM/NTSC4.43
  Sound → Analog
- Progressive
- Output resolution : 1024*768
- OSD : Smart user Interface Grade1
- Picture Enhancement : DNIe-L
- Still picture, Noise reduction
- Comb Filter : 3D comb filter
- PIP : D/W, Large
- Panorama : Wide

■ Sound
- System : Stereo
- Dolby Digital : Tru Surround XT
- Output : 15W + 15W
- Speaker : built-in.

■ Feature
- Component Interface(480i/480p/720p/1080i, Y/Pb/Pr)
- Digital Interface : HDMI
- Picture Size : Auto Wide/16:9/4:3/Panorama/14:9/Zoom/Wide 4:3
- Auto Program
- Sleep Timer : 180 minute
- Clock
- Zoom, Previous channel, White Screen, Color Tone

■ In/Out Terminals(Rear)
- 1 AV Input, 1 SVHS Input
- AV Monitor Output
- Component Input : 480i / 480p / 720p / 1080i
- 15 Pin D-sub Input : ~ XGA (1024 x 768)
- 1 HDMI Input (HDCP) : DTV(480p / 720p / 1080i)
- 1 RF Input

■ Remocon
- TM76

■ Power Supply
- 100V ~ 240V

■ Power
- Standy-by : 3W less
- Max Power : 380W

■ HDMI
- 640x480p @59.94/60Hz
- 720x480p @59.94/60Hz
- 720x576p @59.94/60Hz
- 1280x720p @59.94/60Hz/50Hz
- 1920x1080i @59.94/60Hz/50Hz

■ The table below shows all of the display modes that are supported. (N : Negative, P : Positive)

Resolution		V-Freq.(Hz)	H-Freq.(kHz)	Polarity		Originator
				H	V	
IBM PC/AT Compatible	640 X 350	70.086	31.469	N	P	IBM
	720 X 400	70.087	31.469	P	N	IBM
	640 X 480	59.94	31.469	N	N	VESA DMT
		70	35	N/P	N/P	VESA GTF
		72.809	37.861	N	N	VESA DMT
		75	37.5	N	N	VESA DMT
	800 X 600	56.25	35.156	N/P	N/P	VESA DMT
		60.317	37.879	P	P	VESA DMT
		70	43.75	N/P	N/P	VESA GTF
		72.188	48.077	P	P	VESA DMT
		75	46.875	P	P	VESA DMT
	848 X 480	60	31.02	P	P	VESA DMT
		74.769	37.684	N	P	VESA CVT
	1024 X 768	60.004	48.363	N	N	VESA DMT
		70.069	56.476	N	N	VESA DMT
		72	57.672	N/P	N/P	VESA GTF
		75.029	60.023	P	P	VESA DMT

▶ The interlace mode is not supported.

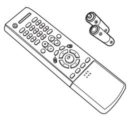
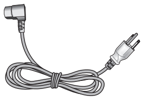
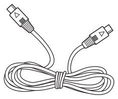
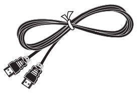
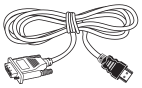
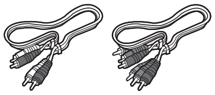
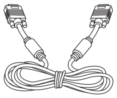
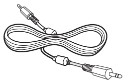
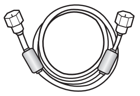
▶ The television might operate abnormally if a non-standard video format is selected.

▶ 480i/p, 576i/p, 720p, or 1080i is not available in pc mode.

2-3 Specifications Analysis

Model		PL-42P5H	PL-42S4S	PL-42D4S
Design				
Basic	Display Type	PDP TV	PDP TV	PDP TV
	Built-In Tuner	O	O	O
	Resolution	1024*768	852*480	852*480
	PDP Module	V4	V3	V3
	Screen Size	42 inches	42 inches	42 inches
	Aspect Ratio	16:9	16:9	16:9
	Power Consumption	380W	330W	330W
	Dimensions	1067 (W) x 640 (D) x 853 (H) mm	1050 (W) X 86 (D) X 755 (H) mm	1028 (W) X 86 (D) X 632 (H) mm
	Weight	39.8 Kg	36 kg	30 kg
Picture	Brightness	1300cd/m2	1000cd/m2	1000cd/m2
	Contrast Ratio	10000:1	3000:01:00	3000:01:00
	Image Enhacer	DNIe-L	DNIe 3	DNIe 3
	Digital Comb Filter	O	O	O
Audio	Equalizer	O	O	O
	Auto Volume	O	O	O
	Surround Sound	SRS TreSurround XT	SRS TreSurround XT	SRS TreSurround XT
	Speaker Output	15W + 15W	15W + 15W	15W + 15W
	Speaker	Included	Included	Included
Features	PIP	O	O	O
	Double Screen	O	O	O
	Caption	X	X	X
	Still Image	O	O	O
	My Color Control	O	O	O
	Color Weakness	O	O	O
	Energy Saving	O	X	X
	Anynet	X	X	X
	D-Net(IEEE1394 S.400)	X	X	X
	POD	X	X	X
	Gemstar (TV Guide On Screen)	X	X	X
	Screen Burn Protection	O	O	O
Connections	Antenna	1Input	1Input	1Input
	CVBS	1AV	3AV	1AV
	S-Video	1Input	2Input	1Input
	Component(Y/PB/PR)	1Input	2Input	1Input
	PC(D-SUB)	1Input(15Pin D-Sub)	1Input(15Pin D-Sub)	1Input(15Pin D-Sub)
	DVI	O	O	O
	HDMI	1Input	X	X
	Sub Woofer	X	X	X
	Optical	X	X	X
	Coaxial	X	X	X

2-4 Accessories

Accessories		Item	Item code	Remark
Supplied Accessories		User Manual	BN68-00866F	Samsung Service center
		Remote Control AAA Batteries	BN59-00492A 4301-000103	
		Power Cord	3903-000144	
Accessories that can be purchased additionally		S-VIDEO Cable	-	Internet shopping mall
		HDMI Cable	-	
		HDMI/DVI cable	-	
		Component Cables (RCA)	-	
		PC Cable	-	
		PC Audio Cable	-	
		Antenna Cable	-	

3. Alignment & Adjustment

3-1 Service Instruction

* Check items listed after changing each

1. Main Board replace : ATM Channel fixing and White Balance adjustment

2. Main SMPS Board replace: Vs, Va Voltage check and adjust

3. DC-DC SMPS Board replace : Output voltage check and adjust

4. Logic Board replace : Not adjustment

5. Y-Main Board replace : Not adjustment

6. X-Main Board replace : Not adjustment

7. Buffer Board replace : Not adjustment

3-2 How to Access Service Mode

■ Using the Customer Remote

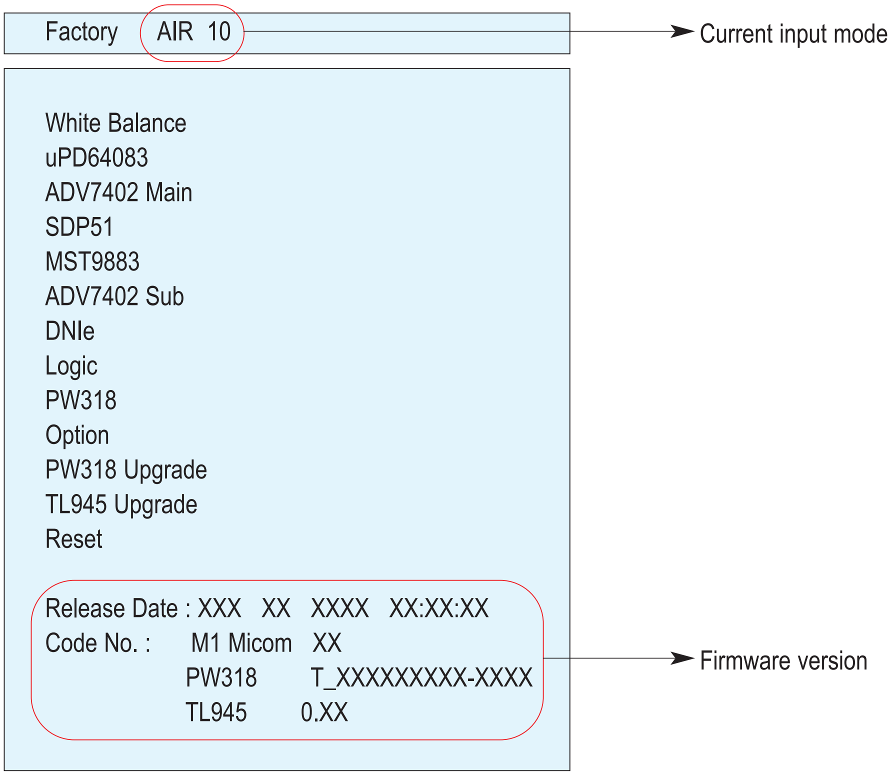
1. Turn the power off and set to stand-by mode.

2. Press the remote buttons in this order; POWER OFF-MUTE-1-8-2- POWER ON to turn the set on.

3. The set turns on and enters service mode.

4. Press the Power button to exit and store data in memory.
   ※ If you fail to enter service mode, repeat steps 1 and 2 above.

5. Initial SERVICE MODE DISPLAY State



Factory AIR 10

White Balance
uPD64083
ADV7402 Main
SDP51
MST9883
ADV7402 Sub
DNIe
Logic
PW318
Option
PW318 Upgrade
TL945 Upgrade
Reset

Release Date : XXX XX XXXX XX:XX:XX
Code No. : M1 Micom XX
PW318 T_XXXXXXXXX-XXXX
TL945 0.XX

※ The firmware version is subject to change without notice.

4. Buttons operations within Service Mode

MENU	Full Menu Display / Move to Parent Menu
Direction keys ▲ / ▼	Item Selection by Moving the Cursor
Direction keys ◀ / ▶	Data Increase/Decrease for the Selected Item
Source	Cycles through the active input source that are connected to the unit

3-3 Factory Data

★ The underlined are items applied during the service adjustment. None of the others should be adjusted.

Fatory mode OSD Display

1. Calibration
2. Option Table
3. White Balance
4. SVP-EX
5. SAA7119
6. MSP34XX/44XX
7. YC Delay
8. Adjust
9. DNIe
10. Chip Debugger OFF
11. Checksum
12. Reset
13. Spread Spectrum
14. Logic

T-PCN42PEUS-XXXX
SUB Micom Ver-xxxx

1. Calibration

① AV Calibration
② PC Calibration
③ DTV Calibration

2. Option Table

No	ITEM	Initial Value	Remark
1	Panel Option	42S5S	42S5S/42D5S/42S5H
2	Gamma	Mode - 2	Mode - 1,2,3,4
3	Analog Dimming	Mode - 3	Mode - 1,2,3,4
4	Auto Power	On	ON/OFF
5	Key Lock	OFF	ON/OFF
6	Anynet	OFF	ON/OFF
7	DDC Write	OFF	ON/OFF
8	LNA	ON	ON/OFF
9	Ant. Gain Display	OFF	ON/OFF
10	Language	English	Osd language
11	Auto FM	OFF	ON/OFF
12	High Deviation	Off	ON/OFF
13	TTX	On	ON/OFF
14	TTX List	Flop	Flop/List
15	TTX TOP	Off	ON/OFF
16	TTX Group	Auto Language	TTX language
17	TTX Level	Level 1.5	LEVEL 1.5 / 2.5
18	Shift Test	OFF	ON/OFF
19	Sound Delay1	OFF	ON/OFF
20	Sound Delay2	OFF	ON/OFF
21	Debug	OFF	ON/OFF

3. White Balance

No	Item	Range	TV/AV	Component	PC	DVI(HDMI)
1	Sub-Briteness	0~255	7	128	130	130
2	R-offset	0~255	138	128	138	138
3	G-offset	0~255	128	128	128	128
4	B-offset	0~255	146	128	144	144
5	Sub-Contrast	0~63	36	32	32	32
6	R-offset	0~255	128	128	128	128
7	G-offset	0~255	128	128	128	128
8	B-offset	0~255	148	128	128	128

4. SVP-EX

① ComB Filter

No	Item	Range	Initial Value	Remark
1	Y-Filter	0 ~ 255	80H	
2		0 ~ 255	80H	
3		0 ~ 255	80H	
4		0 ~ 255	80H	
5		0 ~ 255	80H	

② Peaking

No	Item	Range	Initial Value	Remark
1	V-Peaking	0 ~ 255	80H	
2	Peaking Delay	0 ~ 255	80H	
3	Peaking Gain	0 ~ 255	80H	
4	Peaking Width	0 ~ 255	80H	
5	Praking f0	0 ~ 255	80H	

③ NR

No	Item	Range	Initial Value	Remark
1	Y-NR-Off	0 ~ 255	80H	
2	C-NR-Off	0 ~ 255	80H	
3	Y-NR-ON	0 ~ 255	80H	
4	C-NR-ON	0 ~ 255	80H	

④ Deinterlace

No	Item	Range	Initial Value	Remark
1	Motion	0 ~ 255	80H	
2			80H	
3			80H	
4			80H	

⑤ Picture Gain Adjust

No	Item	Range	TV/AV/S-Video	Component	PC	DVI/HDMI	Remark
1	TCD3 Contrast	0 ~ 255	AV Calibration	78h			
2	TCD3 Brightness	0 ~ 255	AV Calibration	20h			
3	TCD3 CR Saturation	0 ~ 255	78h				
4	TCD3 CB Saturation	0 ~ 255	78h				
5	TCD3 YC Delay	0 ~ 15	00h				
		Range	480I/576I/480P/576P/1080I	720P	PC	HDMI	
6	Analog Y/G offset	00 ~ 255		DTV Calibration	PC Calibration	00 40h	
7	Analog PB/B offset	00 ~ 255		DTV Calibration	PC Calibration	02 00h	
8	Analog PR/R offset	00 ~ 255		DTV Calibration	PC Calibration	02 00h	
9	Analog Y/G Gain	00 ~ 255	D6h		E9h	D6h	
10	Analog PB/B Gain	00 ~ 255	FEh		E9h	FEh	
11	Analog PR/R Gain	00 ~ 255	FEh		E9h	FEh	
12	Black Level Setting	00 ~ 255	00h				
13	Brightness(SVP)	0 ~ 255	00h				

5. SAA7119

No	Item	Range	Initial Value
1	HTC	00 ~ 255	2
2	ATVT	00 ~ 255	1
3	LUFI	00 ~ 255	5
4	NAICO_Brig	00 ~ 255	128
5	NAICO_Cont	00 ~ 255	64
6	NAICO_Satu	00 ~ 255	64
7	NAICO_Hue	00 ~ 255	3
8	COMP_Brig	00 ~ 255	162
9	COMP_Cont	00 ~ 255	92
10	COMP_Satu	00 ~ 255	64
11	TASKA_Brig	00 ~ 255	140
12	TASKA_Cont	00 ~ 255	64
13	TASKA_Satu	00 ~ 255	64
14	LIMOD	00 ~ 255	0
15	LIFIL	00 ~ 255	2
16	LIWGT	00 ~ 255	3

6. MSP34XX/44XX

No	Item	Range	Initial Value
1	FM-Prescale	00 ~ 255	20h
2	NT-M-Prescale	00 ~ 255	20h
3	SECAM-L-Prescale	00 ~ 255	22h
4	AV-Prescale	00 ~ 255	1Ah
5	I2S_1 Prescale	00 ~ 255	10h
6	I2S_2 Prescale	00 ~ 255	10h
7	Carrier Mute	00 ~ 255	42h
8	Pilot High	00 ~ 255	0Eh
9	Pilot Low	00 ~ 255	07h

7. YC Delay

No	Item	Range	TV/AV/S-Video	Component	PC	DVI/HDMI	Remark
1	RF PAL-B/G	00 ~ 255	102	77h	77h	77h	-
2	RF PAL-D/K	00 ~ 255	136				
3	RF PAL- I	00 ~ 255	102				
4	RF SECAM-B/G	00 ~ 255	51				
5	RF SECAM-D/K	00 ~ 255	34				
6	RF SECAM-L/L'	00 ~ 255	51				
7	RF NTSC3.58	00 ~ 255	187				
8	RF NTSC4.43	00 ~ 255	187				
9	AV PAL	00 ~ 255	67				
10	AV SECAM	00 ~ 255	34				
11	AV NTSC 3.58	00 ~ 255	102				
12	AV NTSC4.43	00 ~ 255	102				
13	AV PAL60	00 ~ 255	119				

8. Adjust

No	Item	Range	TV/AV/S-Video	Component	PC	DVI/HDMI	Remark
1	Video Mute Time		10				-
2	Melody Volume	0 ~ 20	5				
3	TTX Contrast	0 ~ 100	50				
4	TTX Brightness	0 ~ 100	50				
5	TTX Color	0 ~ 100	50				
6	Dynamic Contrast	0 ~ 100	100				
7	Dynamic Color	0 ~ 100	50				
8	Dynamic Sharpness	0 ~ 100	60				
9	Standard Contrast	0 ~ 100	90				
10	Standard Brightness	0 ~ 100	80				
11	Standard Color	0 ~ 100	70				
12	Standard Sharpness	0 ~ 100	70				
13	Movie Contrast	0 ~ 100	60				
14	Movie Brightness	0 ~ 100	50				
15	Movie Color	0 ~ 100	50				
16	Movie Sharpness	0 ~ 100	40				
17	RF_dB_1	0 ~ 255	0				
18	RF_dB_2	0 ~ 255	0				
19	RF_dB_3	0 ~ 255	0				

9. DNIe Lite

No	Item	Range	TV/AV/S-Video	TV/AV/S-Video	Component	PC	DVI/HDMI
1	PATT_SEL	DNIe Lite 0x002C [13:08]	0 ~ 63	0			
2	BLACK_TILT	DNIe Lite 0x005E [15:08]	00 ~ 255	120	120	80	120
3	BLACK_GAINMAX	DNIe Lite 0x00B9 [09:00]	00 ~ 1023	85	85	93	95
4	TEST_MCC	DNIe Lite 0x00C1 [12]	0 ~ 1	0			
5	OVERLAP_MCM	DNIe Lite 0x00C1 [11:10]	00 ~ 03	0			
6	AREA_EN_MCC	DNIe Lite 0x0062 [15:11]	00 ~ 31	31			
7	R-Offset(Post)	DNIe Lite 0x0080 [09:00]	-512 ~ 511	0	0	0	0
8	G-Offset(Post)	DNIe Lite 0x0081 [09:00]	-512 ~ 511	0	0	0	0
9	B-Offset(Post)	DNIe Lite 0x0082 [09:00]	-512 ~ 511	0	0	0	0
10	R-Gain(Post)	DNIe Lite 0x007B [07 : 00]	0 ~ 255	128	128	128	128
11	G-Gain(Post)	DNIe Lite 0x007C [15 : 08]	0 ~ 255	128	128	128	128
12	B-Gain(Post)	DNIe Lite 0x007C [07 : 00]	0 ~ 255	128	128	128	128
13	Com_Offset_Sel(Post)	DNIe Lite 0x00F2 [13]	0 , 1	1			
14	Com_Gain_Sel(Post)	DNIe Lite 0x00F2 [14]	0 , 1	1			

10. Chip Debugger : ON/OFF

11. Checksum XXXX XXXX

12. Reset

13. Spread Spectrum

14. Logic

No	Item	Range	Initial Value
1	Int/Ext Sel		0
2	Pat Sel		0
3	FCRL CON		0
4	Image Sticking		0
5	Error Mode Check		0
6	Error Code Table		0
7	Vs Reference		0
8	Vs Average		0
9	Vs to D/A		0
10	Va Reference		0
11	Va Average		0
12	Va to D/A		0

3-4 Service Adjustment

3-4-1 White Balance Adjustment

1. W/B Adjustment is required for the following two modes : Component → Video
   (Signal equipment : MSPG-925LTH, Measurement equipment : CA210)
   ※ To adjust HDMI, use the HDMI ↔ DVI conversion cable, and connect the DVI output from MSPG-925LTH to the HDMI input.

2. Adjustment Method
   -Component and Video mode Adjustment PC, HDMI mode offset.

   ※ Thus, Micom saves the PL42D5S W/B data separately for each memory mode of the block

   - White Balance Coordinates by Mode

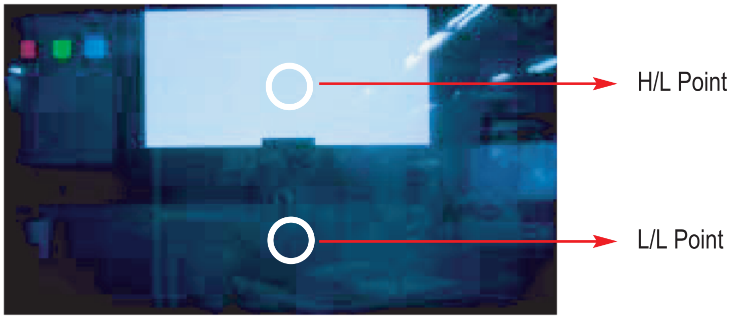
		VIDEO	COMPONENT
H/L (High Light)	x	265	265
	y	265	265
	Y(fL)	31	21
L/L Low Light	x	280	280
	y	285	285
	Y(fL)	1.3	0.8

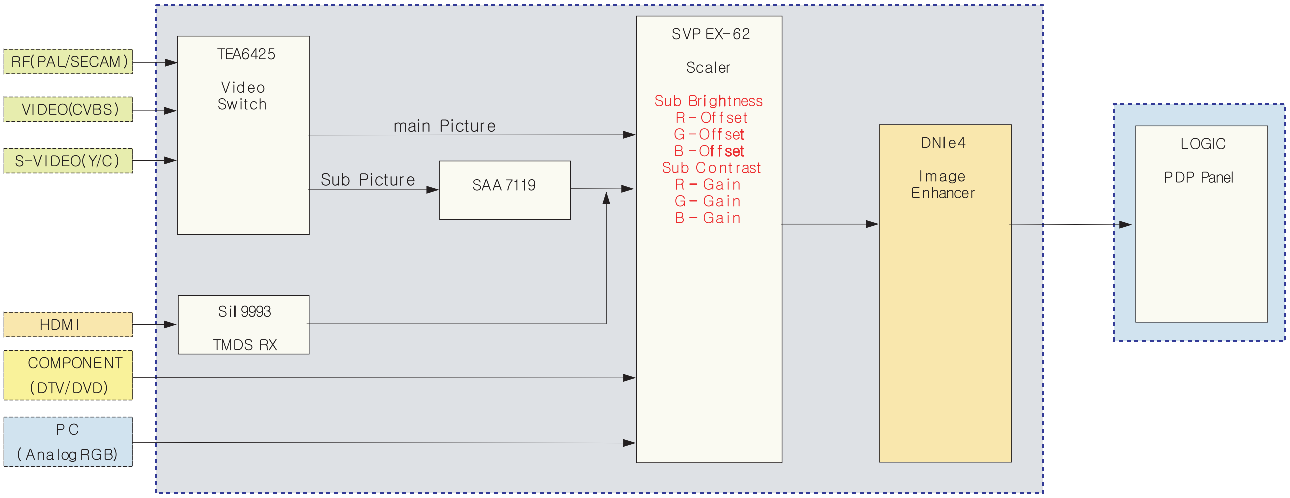
1. Pattern Generator Device : 925 LTH (Manufacturer: Master)

2. Adjust Pattern : ABL Pattern(Master 925LTH #16 Pattern)

3. Adjust Timing : Video - PAL (Master 925LTH Model #2)
   Component - 720P(Master 925LTH Model # 6)

4. The adjustment procedures for each mode are described as follows:
   1) Componen
      ① Send the Toshiba ABL Pattern (Pattern #16) of the 1080i (Model #5) resolution signal to the DVI IN port using the Master 925 LTH.
      ② Enter Factory mode, move to "White Balance" and click Select.
      ③ Set the coordinates of H/L and L/L by adjusting "Sub Contrast", "Sub Bright", "R Drive", "G Drive", "B Drive", "R Cutoff", "G Cutoff", and "B Cutoff".
   2) Video
      ① Send the Toshiba ABL Pattern (Pattern #16) of the 1080i (Model #5) resolution signal to the DVI IN port using the Master 925 LTH.
      ② Enter Factory mode, move to "White Balance" and click Select.
      ③ Set the coordinates of H/L and L/L by adjusting "Sub Contrast", "Sub Bright", "R Drive", "G Drive", "B Drive", "R Cutoff", "G Cutoff", and "B Cutoff".

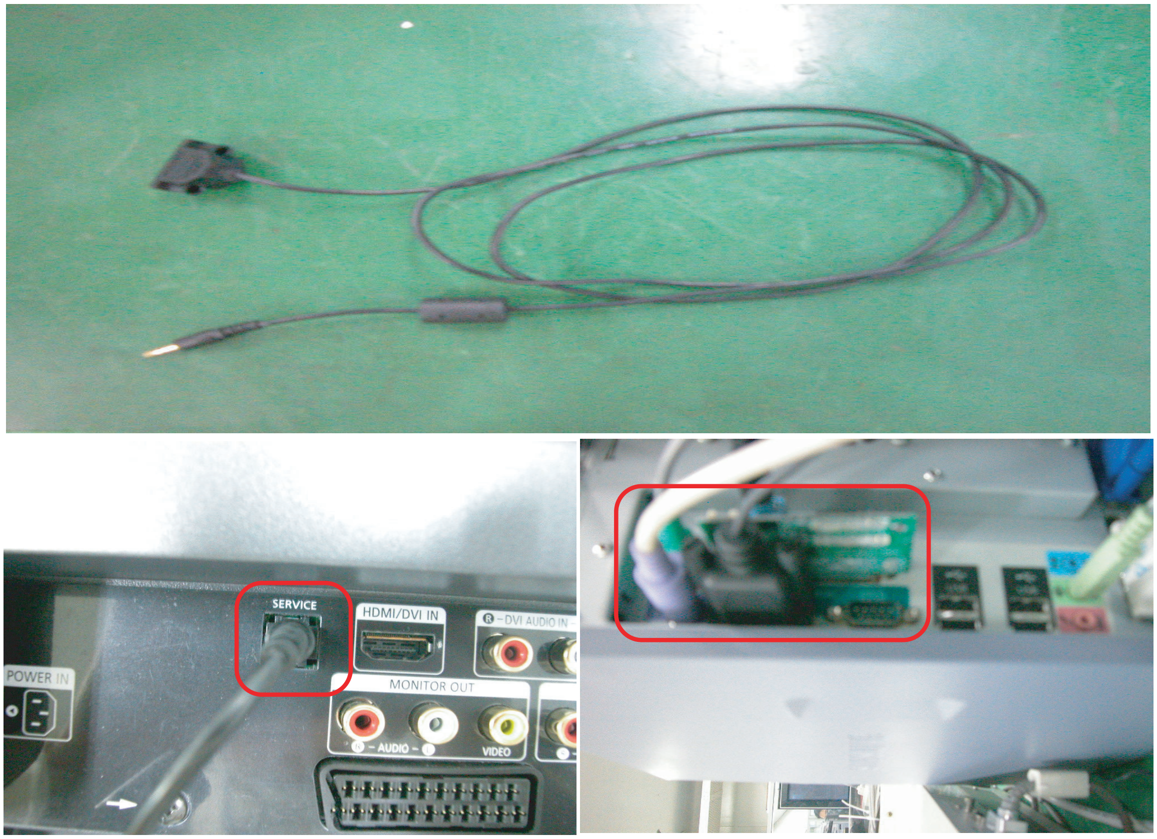



RF(PAL/SECAM)
VIDEO(CVBS)
S-VIDEO(Y/C)
HDMI
COMPONENT (DTV/DVD)
PC (Analog RGB)
TEA6425 Video Switch
main Picture
Sub Picture
SAA 7119
SiI 9993 TMDS RX
SVP EX-62 Scaler
Sub Brightness
R-Offset
G-Offset
B-Offset
Sub Contrast
R-Gain
G-Gain
B-Gain
DNIe4 Image Enhancer
LOGIC
PDP Panel

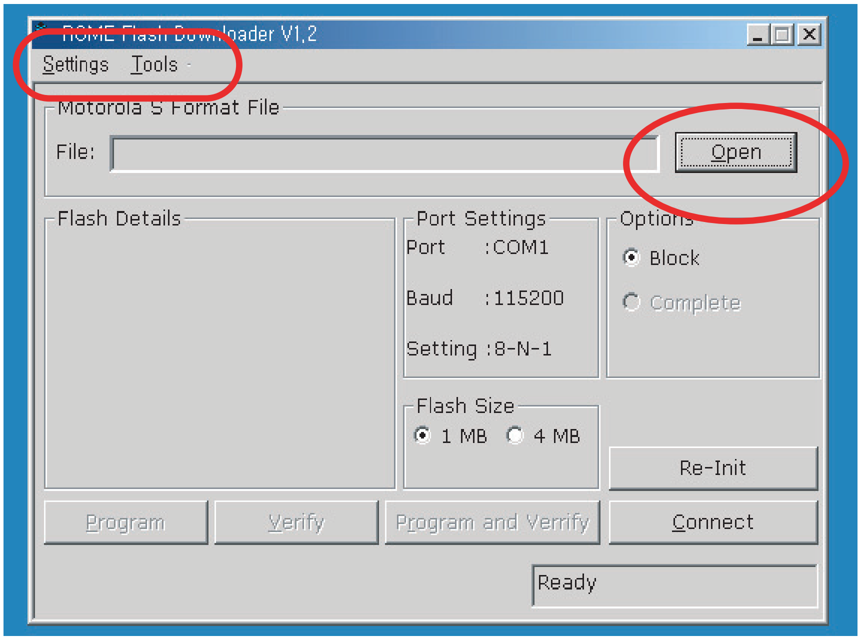
3-5 Software Upgrade

3-5-1 Digital Board TL945 Flash Upgrade

1. Connect one end of the RS-232C cable to the PC COM port and the other end of the cable to the PDP Service port while the power of the PDP is off.


SERVICE
HDMI/DVI IN
DVI AUDIO IN
POWER IN
MONITOR OUT
AUDIO
VIDEO

2. Rome Flash Downloader.


ROME Flash Downloader V1,2
Settings
Tools
Motorola S Format File
File:
Open
Flash Details
Port Settings
Options
Block
Complete
Flash Size
1 MB
4 MB
Re-Init
Program
Verify
Program and Verify
Connect

Port :COM1

Baud :115200

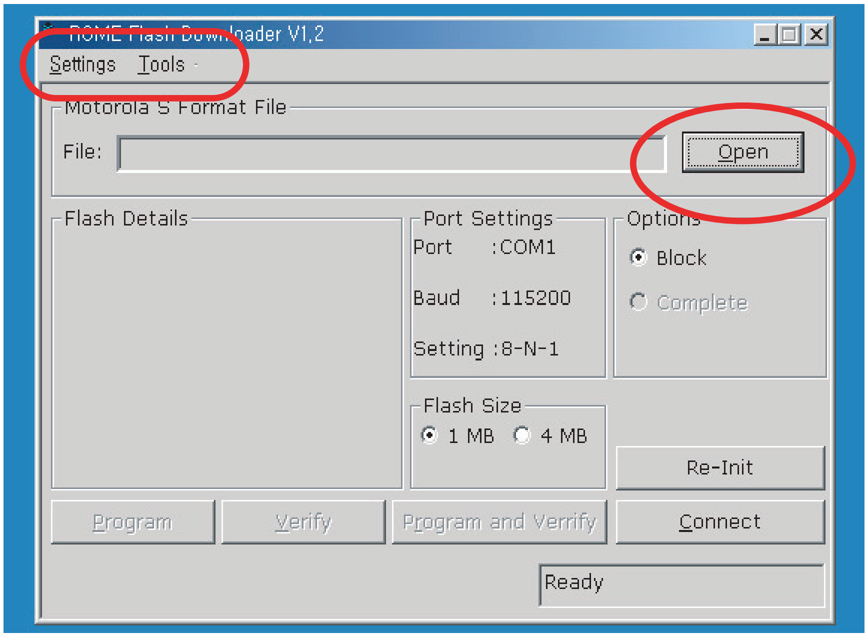
Setting :8-N-1

● Block ○ Complete

● 1 MB ○ 4 MB

Ready

3. When the Flash Downloader is launched, click the Open button.



ROME Flash Downloader V1.2
Settings
Tools
Motorola S Format File
File:
Open
Flash Details
Port Settings
Options
Flash Size
Re-Init
Program
Verify
Program and Verrify
Connect

Port :COM1

Baud :115200

Setting :8-N-1

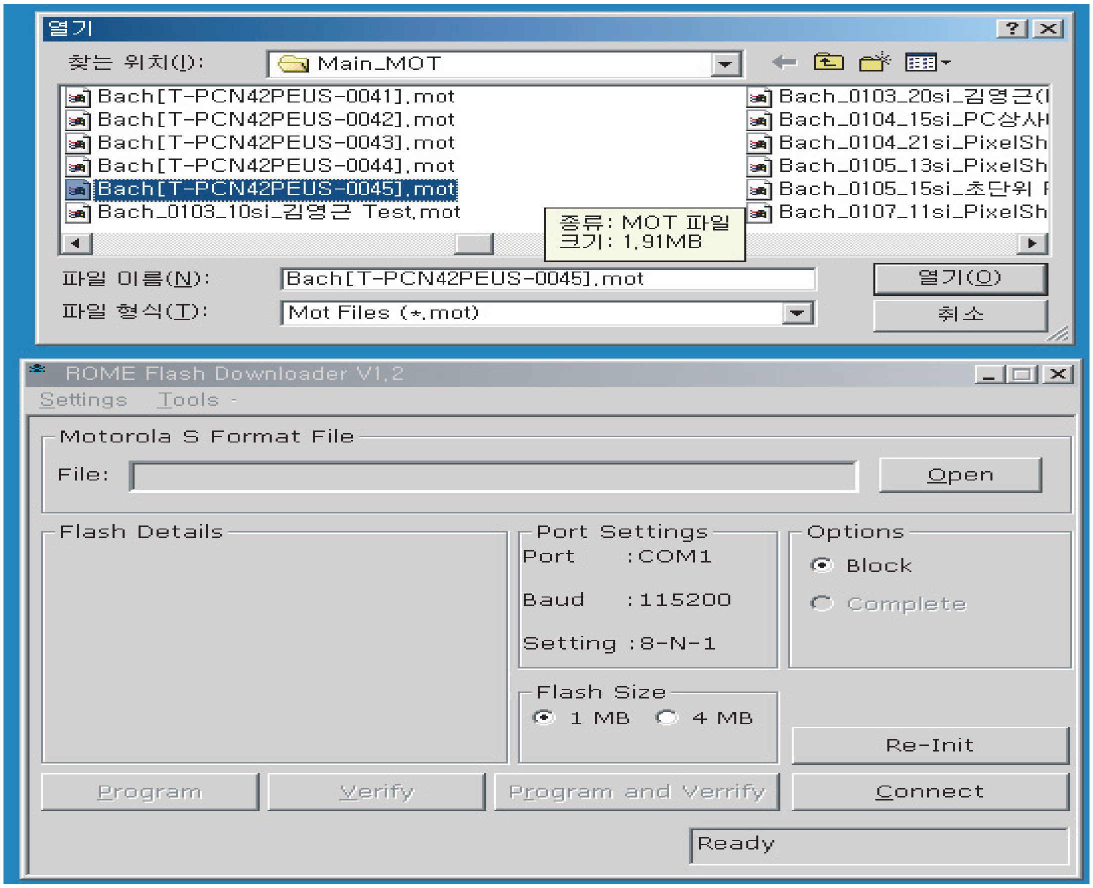
● Block

○ Complete

● 1 MB ○ 4 MB

Ready

4. Select a file to be downloaded from the computer.



열기
열기(O)
취소
ROME Flash Downloader V1.2
Settings
Tools
Motorola S Format File
File:
Open
Flash Details
Port Settings
Options
Flash Size
Re-Init
Program
Verify
Program and Verrify
Connect

찾는 위치(I): Main_MOT

- Bach[T-PCN42PEUS-0041].mot
- Bach[T-PCN42PEUS-0042].mot
- Bach[T-PCN42PEUS-0043].mot
- Bach[T-PCN42PEUS-0044].mot
- Bach[T-PCN42PEUS-0045].mot
- Bach_0103_10si_김영근 Test.mot
- Bach_0103_20si_김영근(
- Bach_0104_15si_PC상사
- Bach_0104_21si_PixelSh
- Bach_0105_13si_PixelSh
- Bach_0105_15si_초단위 F
- Bach_0107_11si_PixelSh

종류: MOT 파일
크기: 1.91MB

파일 이름(N): Bach[T-PCN42PEUS-0045].mot

파일 형식(T): Mot Files (*.mot)

Port :COM1

Baud :115200

Setting :8-N-1

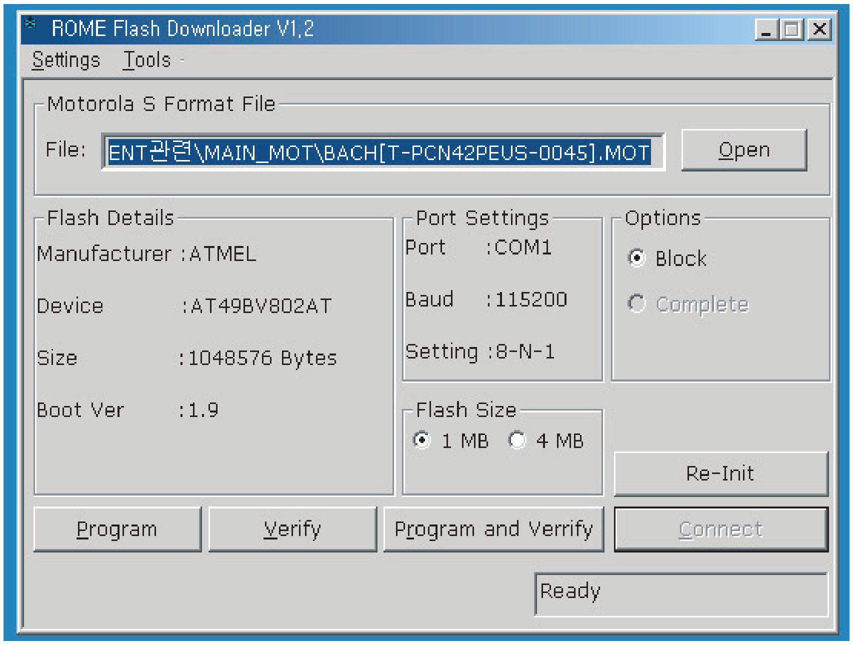
● Block

○ Complete

● 1 MB ○ 4 MB

Ready

5. After selecting a target file, click the Connect button and turn the power on. When the program is activated, Ready click.


ROME Flash Downloader V1.2
Settings
Tools
Open
Re-Init
Program
Verify
Program and Verrify
Connect

Motorola S Format File
File: ENT관련\MAIN_MOT\BACH[T-PCN42PEUS-0045].MOT

Flash Details
Manufacturer : ATMEL
Device : AT49BV802AT
Size : 1048576 Bytes
Boot Ver : 1.9

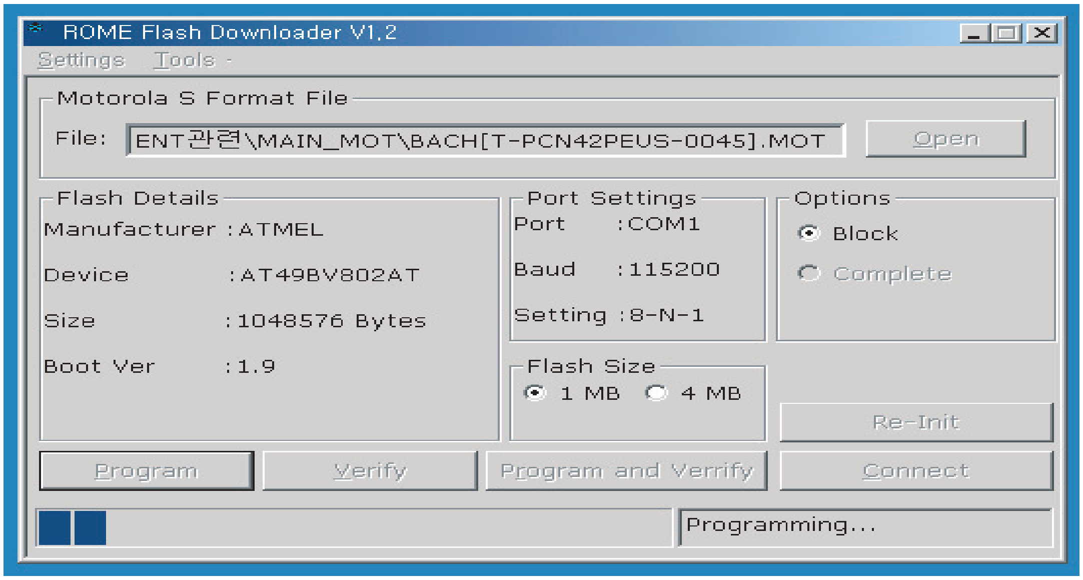
Port Settings
Port : COM1
Baud : 115200
Setting : 8-N-1

Options
● Block
○ Complete

Flash Size
● 1 MB ○ 4 MB

Ready

6. Note that the power must not be turned off during the download.


ROME Flash Downloader V1.2
Settings
Tools
Open
Re-Init
Program
Verify
Program and Verrify
Connect

Motorola S Format File
File: ENT관련\MAIN_MOT\BACH[T-PCN42PEUS-0045].MOT

Flash Details
Manufacturer : ATMEL
Device : AT49BV802AT
Size : 1048576 Bytes
Boot Ver : 1.9

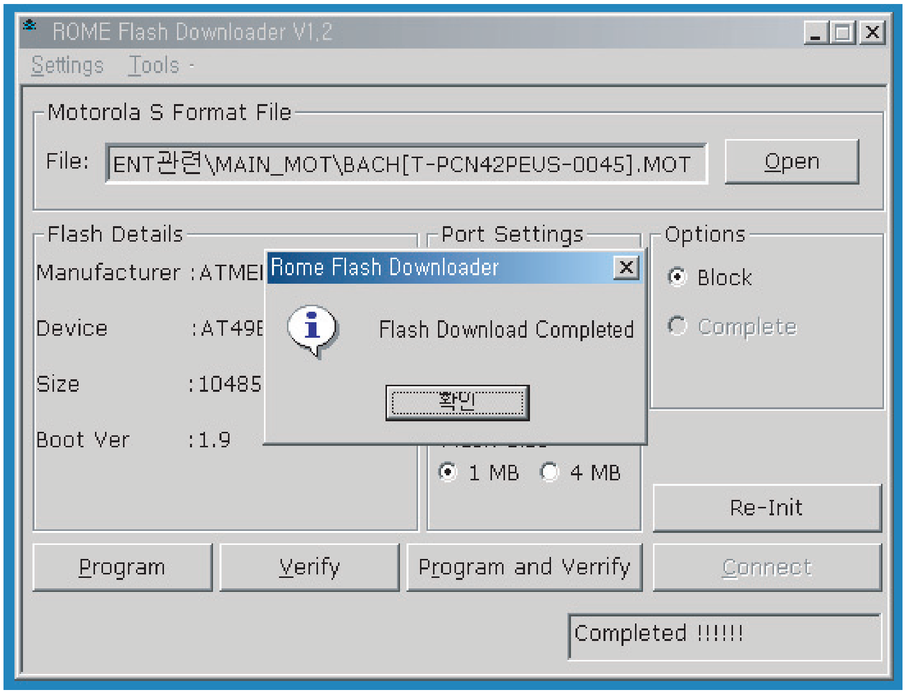
Port Settings
Port : COM1
Baud : 115200
Setting : 8-N-1

Options
● Block
○ Complete

Flash Size
● 1 MB ○ 4 MB

Programming...

7. After the download is finished, the Flash Download Completed popup window opens. That indicates S/W upgrade is completed.



ROME Flash Downloader V1.2
Settings Tools -
Motorola S Format File
Open
Flash Details
Port Settings
Options
● Block
○ Complete
○ 1 MB ○ 4 MB
Re-Init
Program
Verify
Program and Verrify
Connect
Rome Flash Downloader
확인

File: ENT관련\MAIN_MOT\BACH[T-PCN42PEUS-0045].MOT

Manufacturer :ATMEl

Device :AT49E

Size :10485

Boot Ver :1.9

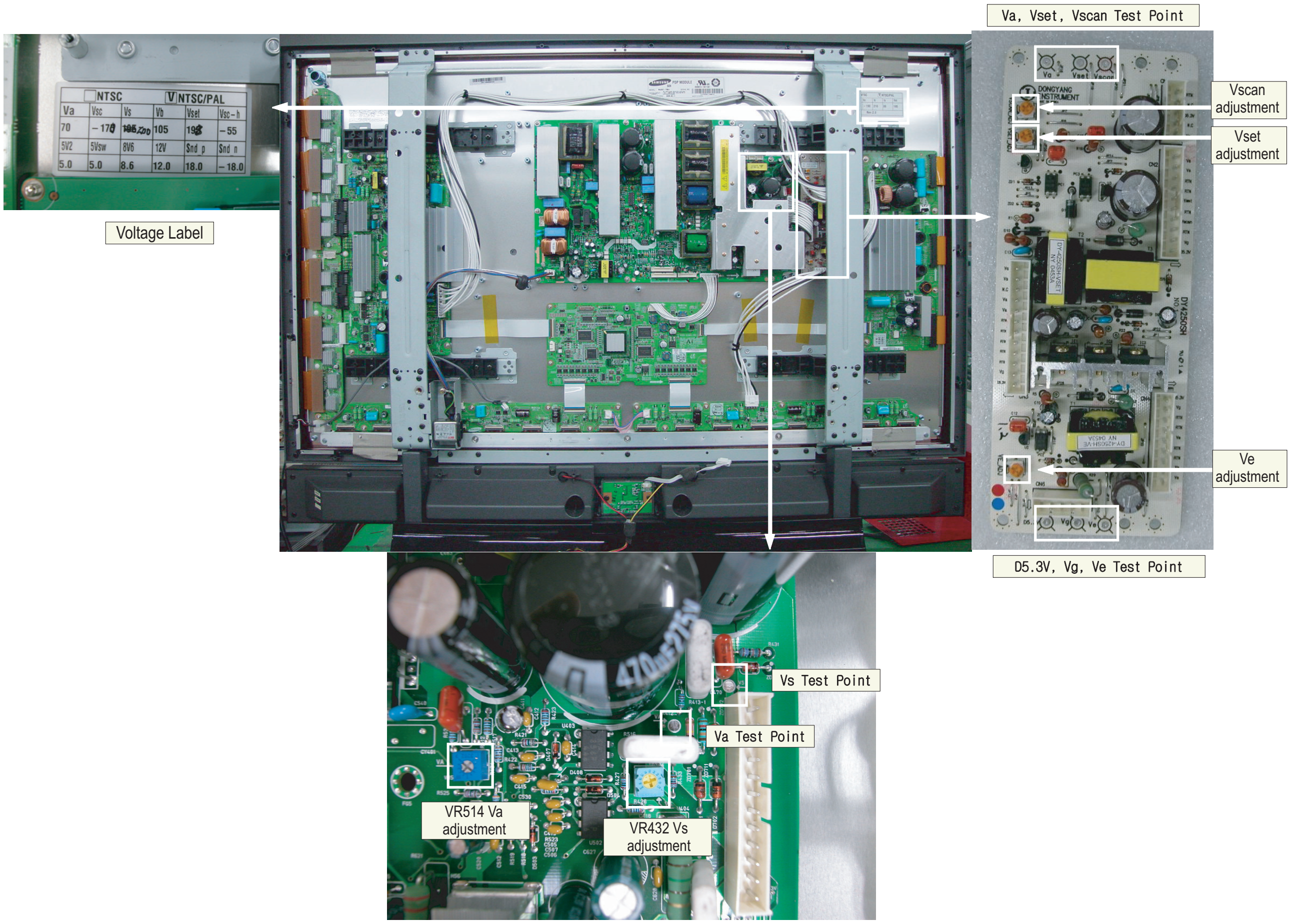
Flash Download Completed

Completed !!!!!!

3-6 Replacements & Calibration

3-6-1 Voltage Adjustment

※ When the SMPS is replaced, the Va, Vs voltages must be checked and adjusted to the proper levels indicated on the panel sticker.



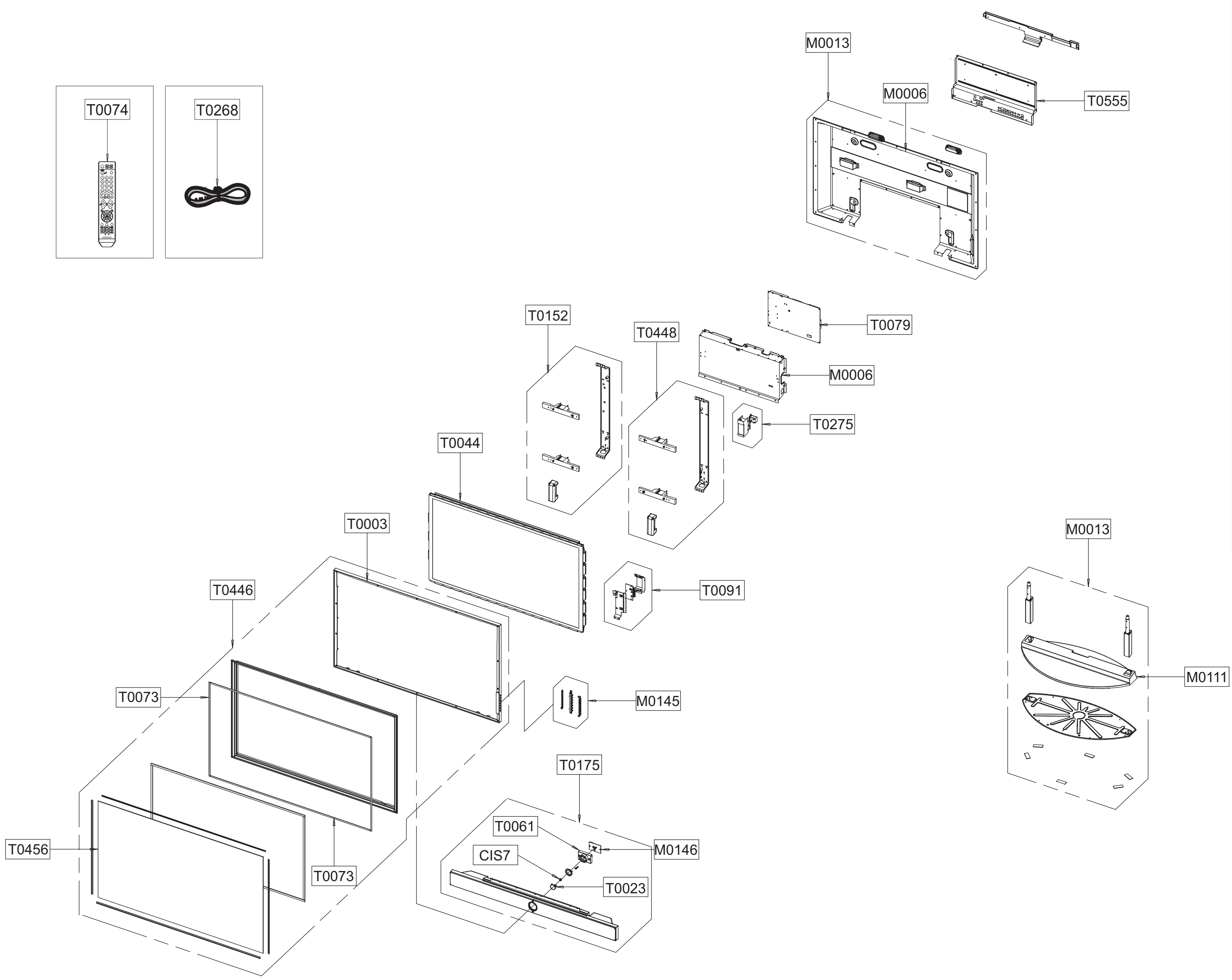
☐NTSC			☑NTSC/PAL		
Va	Vsc	Vs	Vb	Vset	Vsc-h
70	-178	~~195~~ 200	105	198	-55
5V2	5Vsw	8V6	12V	Snd_p	Snd_n
5.0	5.0	8.6	12.0	18.0	-18.0

Voltage Label
Va, Vset, Vscan Test Point
Vscan adjustment
Vset adjustment
Ve adjustment
D5.3V, Vg, Ve Test Point
Vs Test Point
Va Test Point
VR514 Va adjustment
VR432 Vs adjustment

4. Exploded View & Part List

4-1 PL42P5HX/XAX

You can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr



Loc. No.	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
CIS7	AA61-60003B	SPRING ETC-CS	-,SUS304,-,-,OD11.2,N7,OD1	1	S.N.A	
M0006	BN63-01633A	COVER-REAR	42P5,PCM,T0.5	1	S.N.A	
M0006	BN63-01634C	COVER-REAR SUB	42S5,SECC,T1.0	1	S.N.A	
M0013	BN96-02140D	ASSY STAND P-BASE	42S5H,ASIA,XTT,HIPS HB	1	S.A	
M0013	BN96-01786A	ASSY COVER P-REAR	42P5,PCM,T0.5	1	S.A	
M0111	BN63-01813H	COVER-STAND	42S5H,ASIA XTT,HIPS,T3.5,HB,	1	S.N.A	
M0145	BN96-02550A	ASSY BOARD P-FUNCTION	SCHUBERT,CT5000-36	1	S.A	
M0146	BN96-02050E	ASSY BOARD P-POWER & IR	SCHUBERT,CT5000-	1	S.A	
T0003	BN96-02693D	ASSY COVER P-FRONT	42S5,ASIA,HIPS HB,BKN	1	S.A	
T0023	BN64-00336A	KNOB POWER	42P5,PC,VIOLET	1	S.N.A	
T0044	BN96-02889A	ASSY PDP MODULE P	M1,S42AX-YB01,V4,1024*	1	S.A	
T0061	BN64-00338A	WINDOW-REMOCON	42P5,ACRYL,5%	1	S.N.A	
T0073	AA63-01078A	GASKET-EMI	42P5,AL POIL,T1.5,7,1006	2	S.N.A	
T0073	AA63-01079A	GASKET-EMI	42P5,AL POIL,T1.5,W7,L614.5	2	S.N.A	
T0074	BN59-00492A	REMOCON	PL42P5H,TM77,SAMSUNG SIN,47,SILV	1	S.A	
T0079	BN94-00755B	ASSY PCB MISC-MAIN	PL-42P5H,D72A,BN41-00	1	S.A	
T0091	BN94-00732A	ASSY PCB MISC-SIDE A/V	HPR4272X,D71A,SCH	1	S.A	
T0152	BN96-01774A	ASSY BRACKET P-WALL RIGHT	SPD-42P5HD,SEC	1	S.N.A	
T0175	BN96-01737B	ASSY SPEAKER P	8ohm,P5,42,15W,Urethan co	1	S.A	
T0175	BN63-01015B	SHIELD-AV JACK	50P5,SECC,T0.5	1	S.N.A	
T0268	3903-000144	CBF-POWER CORD	DT,US,BP3/Y,U(IEC C13-RA)	1	S.A	
T0275	BN96-02369A	ASSY MISC P-INLET	HP-R4252,STRAUSS,DOCUM	1	S.N.A	
T0446	BN96-02724A	ASSY BRACKET P-FRONT	DP,BP61-01474A,5A,6	1	S.N.A	
T0448	BN96-01775A	ASSY BRACKET P-WALL LEFT	SPD-42P5HD,SECC	1	S.N.A	
T0555	BN96-01392Y	ASSY MISC P-BRKT TERMINAL	P5(BACH),ASIA,	1	S.N.A	

5. Electrical Part List

5-1 PL42P5HX/XAX Service Item

You can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr

Loc. No.	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
T0245	BN39-00454A	LEAD CONNECTOR-ASSY	SPD-50P4HD,UL2547/11	1	S.A	
M2893	BN39-00632A	LEAD CONNECTOR	HPR4252,UL1617#22,UL/CSA,	1	S.A	
M2893	BN39-00667C	LEAD CONNECTOR-LVDS	D71C/SPD-42S5HD,UL20	1	S.A	
M2893	BN39-00675A	LEAD CONNECTOR	PUCCINI,UL1007#26,10PIN,1	1	S.A	
M2893	BN39-00676A	LEAD CONNECTOR	PUCCINI,UL1007#26,12PIN,1	1	S.A	
T0074	BN59-00492A	REMOCON	PL42P5H,TM77,SAMSUNG SIN,47,SILV	1	S.A	
T0091	BN94-00732A	ASSY PCB MISC-SIDE A/V	HPR4272X,D71A,SCH	1	S.A	
T0079	BN94-00755B	ASSY PCB MISC-MAIN	PL-42P5H,D72A,BN41-00	1	S.A	
T0175	BN96-01737B	ASSY SPEAKER P	8ohm,P5,42,15W,Urethan co	1	S.A	
M0013	BN96-01786A	ASSY COVER P-REAR	42P5,PCM,T0.5	1	S.A	
T0159	BN96-01801B	ASSY PCB P-SMPS	SPD-50P5HDM,100~240V,395	1	S.A	
M0013	BN96-02140D	ASSY STAND P-BASE	42S5H,ASIA,XTT,HIPS HB	1	S.A	
T0003	BN96-02693D	ASSY COVER P-FRONT	42S5,ASIA,HIPS HB,BKN	1	S.A	
T0044	BN96-02889A	ASSY PDP MODULE P	M1,S42AX-YB01,V4,1024*	1	S.A	

MEMO

6. Troubleshooting

6-1 First Checklist for Troubleshooting

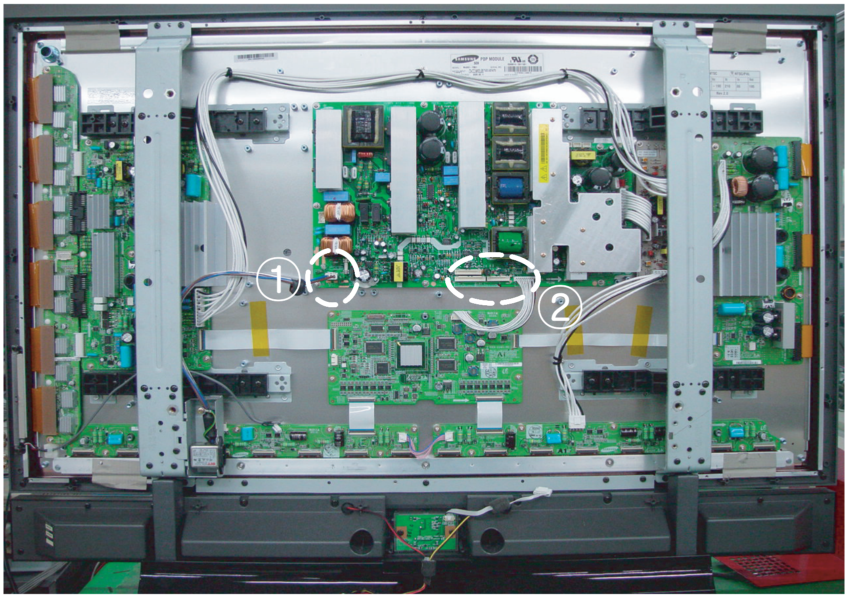
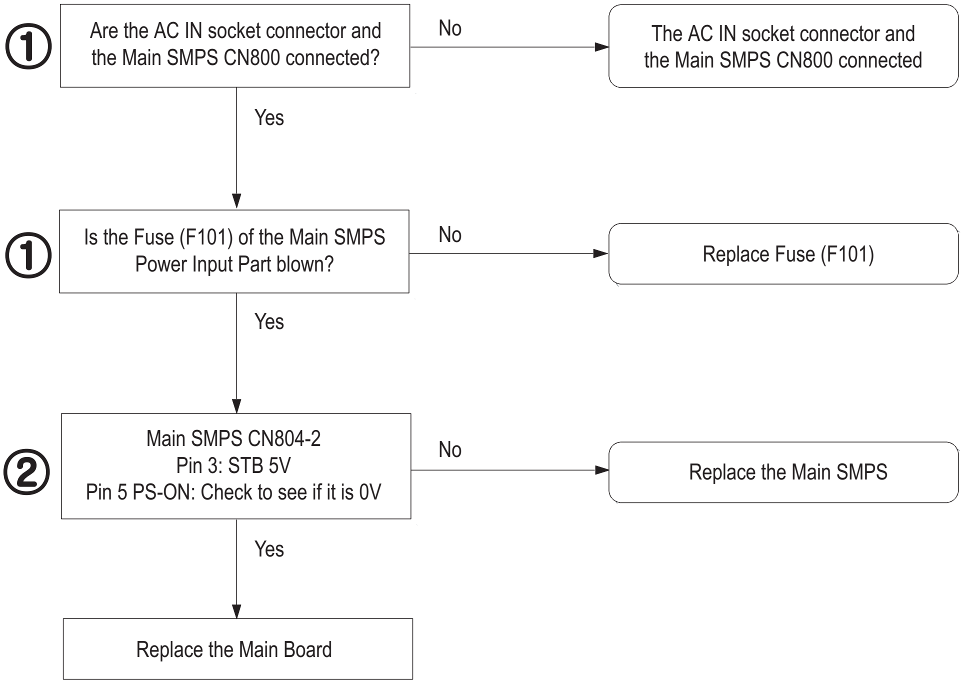
1. Check the various cable connections first.
   - Check to see if there is a burnt or damaged cable.
   - Check to see if there is a disconnected cable connection or a connection is too loose.
   - Check to see if the cables are connected according to the connection diagram.

2. Check the power input to the Main Board.

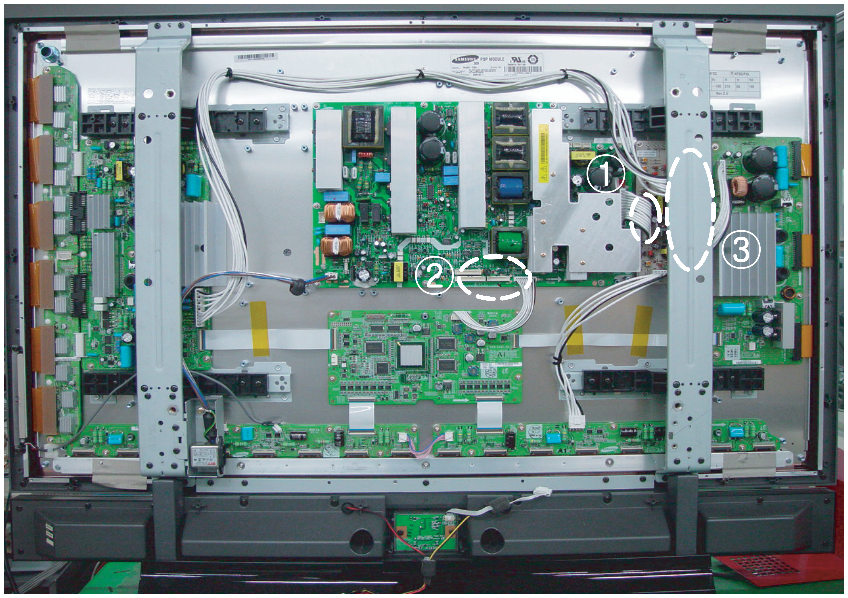
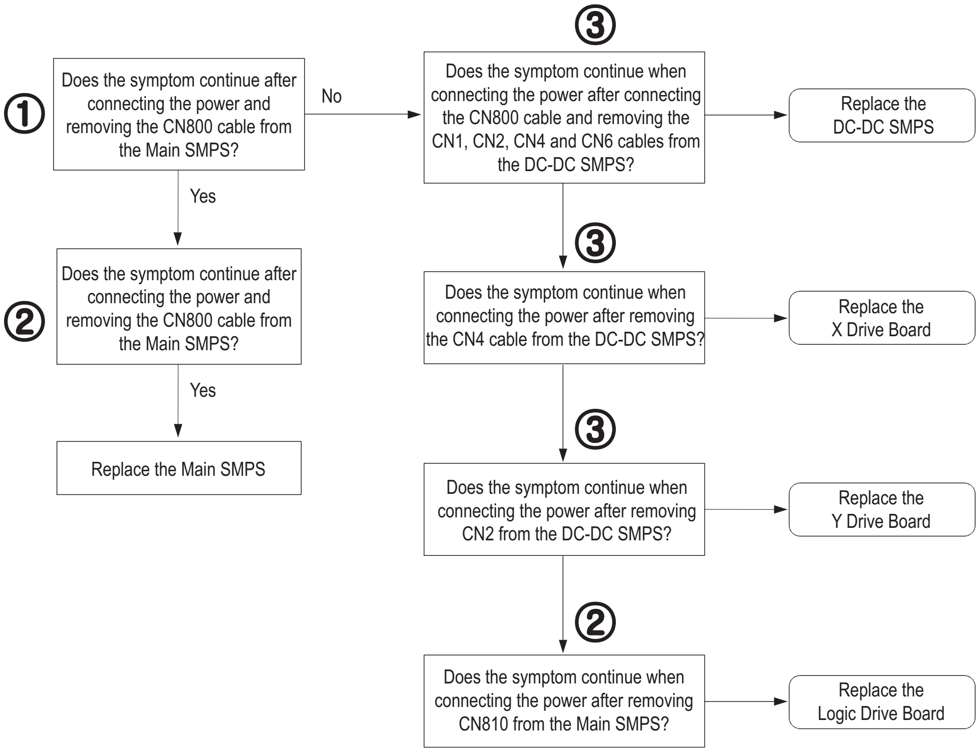
3. Check the voltage in and out between the SMPS ↔ Main Board, between the SMPS ↔ X, Y Drive Board, and between the Logic Boards.

6-2 Checkpoints by Error Mode

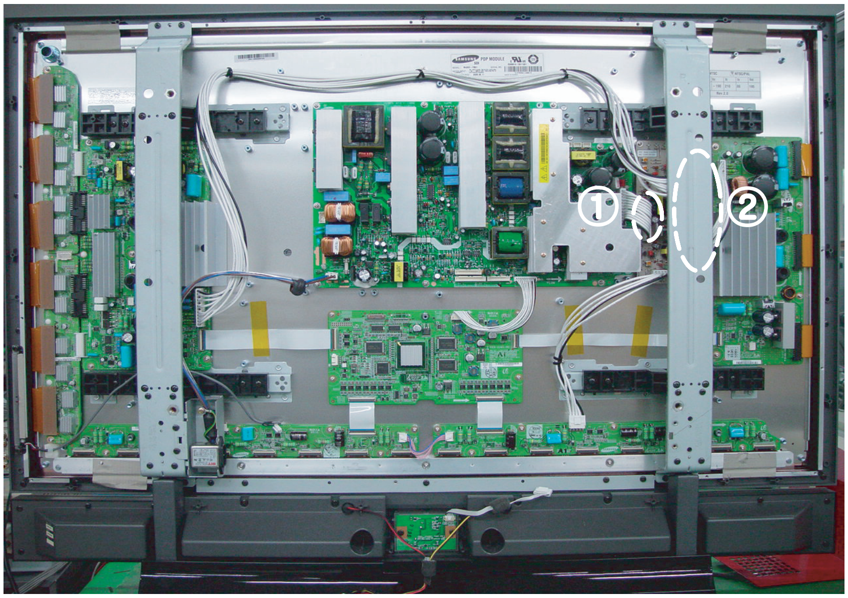
6-2-1 No Power

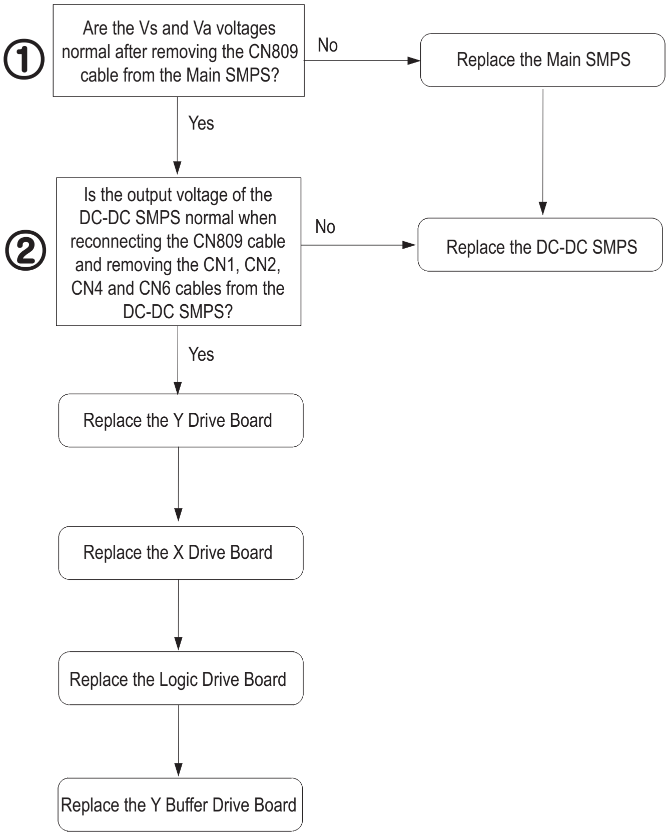
Symptom	- The LEDs on the front panel do not work when connecting the power cord. - The SMPS relay does not work when connecting the power cord. - The power of the unit seems to be out of order.
Major Checklist	The SMPS relay or the LEDs on the front panel do not work when connecting the power cord if the cables are improperly connected or the Main Board or SMPS is out of order. In this case, check the following: - Check the internal cable connection status inside the unit. - Check the fuses of each part. - Check the output voltage of SMPS. - Replace the Main Board.
Troubleshooting Procedures	  ① Are the AC IN socket connector and the Main SMPS CN800 connected? No The AC IN socket connector and the Main SMPS CN800 connected Yes ① Is the Fuse (F101) of the Main SMPS Power Input Part blown? No Replace Fuse (F101) Yes ② Main SMPS CN804-2 Pin 3: STB 5V Pin 5 PS-ON: Check to see if it is 0V No Replace the Main SMPS Yes Replace the Main Board

6-2-2 When the unit is repeatedly turned on and off

Symptom	- The SMPS relay is repeatedly turned on and off.
Major Checklist	In general, the SMPS relay repeatedly turns on and off by the protection function due to a defect on a board connected to the SMPS. - Disconnect all cables from the SMPS, operate the SMPS alone and check if the SMPS works properly and if each voltage output is correct. - If the symptom continues even when SMPS is operated alone, replace the SMPS. - If the symptom is not observed when operating the SMPS alone, find any defective ASSYs by connecting the cables one by one.
Troubleshooting Procedures	  ① Does the symptom continue after connecting the power and removing the CN800 cable from the Main SMPS? No ③ Does the symptom continue when connecting the power after connecting the CN800 cable and removing the CN1, CN2, CN4 and CN6 cables from the DC-DC SMPS? Replace the DC-DC SMPS Yes ② Does the symptom continue after connecting the power and removing the CN800 cable from the Main SMPS? Yes Replace the Main SMPS ③ Does the symptom continue when connecting the power after removing the CN4 cable from the DC-DC SMPS? Replace the X Drive Board ③ Does the symptom continue when connecting the power after removing CN2 from the DC-DC SMPS? Replace the Y Drive Board ② Does the symptom continue when connecting the power after removing CN810 from the Main SMPS? Replace the Logic Drive Board
Caution	When separating and connecting the cables such as CN809 of the Main SMPS, CN1, CN2, CN3, CN4 and CN5 of DC-DC SMPS, CN of the X Drive Board, and CN of the Y Drive Board, a spark may be generated by the electric charge of the high capacity capacitor. Therefore, wait some time after separating the power cord from the unit.

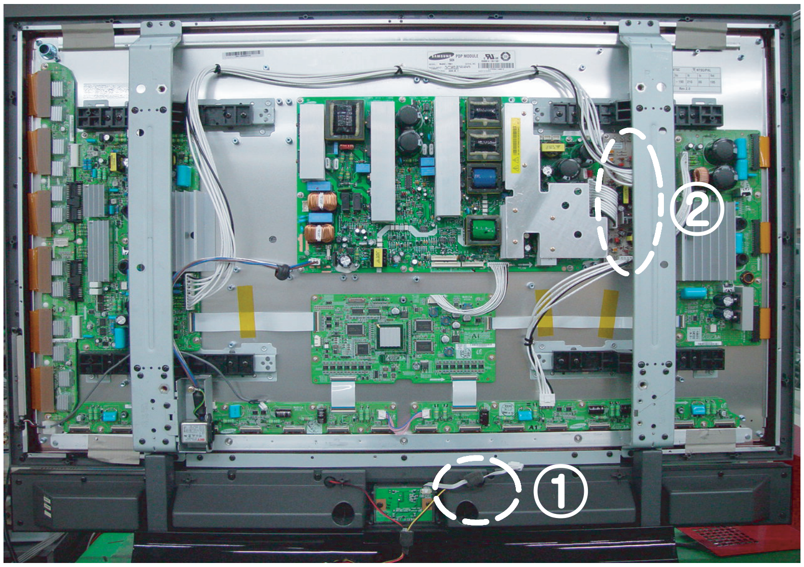
6-2-3 No Picture (When audio is normal)

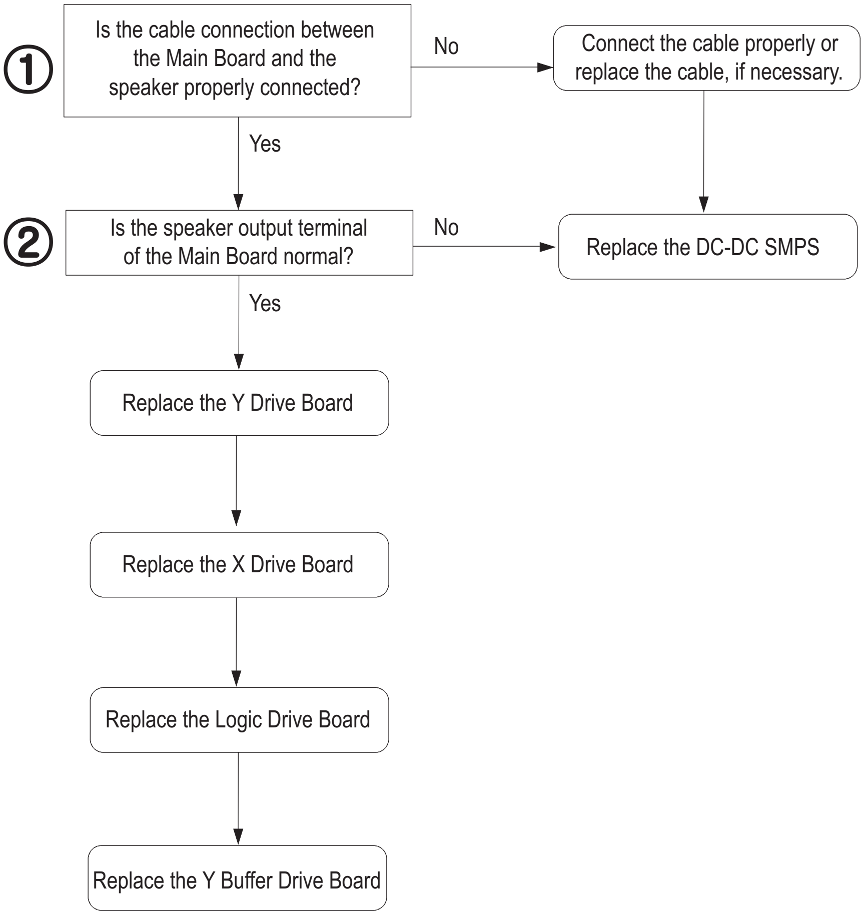
<table>
<tr><td>Symptom</td><td>- Audio is normal but no picture is displayed on the screen.</td></tr>
<tr><td>Major Checklist</td><td>- This may happen when the Main Board is normal but the X, Y Drive Board, Logic Board, or Y Buffer Board is out of order.
- The output voltage of the Main SMPS or the DC-DC SMPS is out of order.
- This may happen when the LVDS cable connecting the Main Board and the Logic Board is disconnected.</td></tr>
<tr><td>Troubleshooting Procedures</td><td>



①
Are the Vs and Va voltages normal after removing the CN809 cable from the Main SMPS?
No
Replace the Main SMPS
Yes
②
Is the output voltage of the DC-DC SMPS normal when reconnecting the CN809 cable and removing the CN1, CN2, CN4 and CN6 cables from the DC-DC SMPS?
No
Replace the DC-DC SMPS
Yes
Replace the Y Drive Board
Replace the X Drive Board
Replace the Logic Drive Board
Replace the Y Buffer Drive Board
</td></tr>
<tr><td>Caution</td><td>When separating and connecting the cables such as CN809 of the Main SMPS, CN1, CN2, CN3, CN4 and CN5 of the DC-DC SMPS, CN of the X Drive Board, and CN of the Y Drive Board, a spark may be generated by the electric charge of the high capacity capacitor. Therefore, wait some time after separ ating the power cord from the unit.</td></tr>
</table>

6-2-4 No Sound

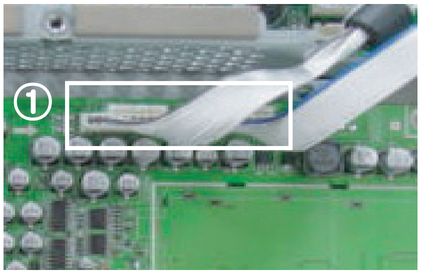
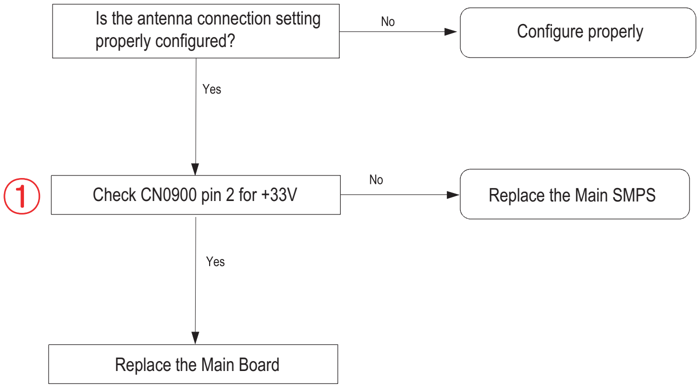
<table>
<tr><td>Symptom</td><td>- Video is normal but there is no sound.</td></tr>
<tr><td>Major Checklist</td><td>- When the speaker connectors are disconnected or damaged.
- When the sound processing part of the Main Board is out of order.
- Speaker defect.
- When setting the volume to 0 (Nonsense).</td></tr>
<tr><td>Troubleshooting Procedures</td><td>




①
Is the cable connection between the Main Board and the speaker properly connected?
No
Connect the cable properly or replace the cable, if necessary.
Yes
②
Is the speaker output terminal of the Main Board normal?
No
Replace the DC-DC SMPS
Yes
Replace the Y Drive Board
Replace the X Drive Board
Replace the Logic Drive Board
Replace the Y Buffer Drive Board

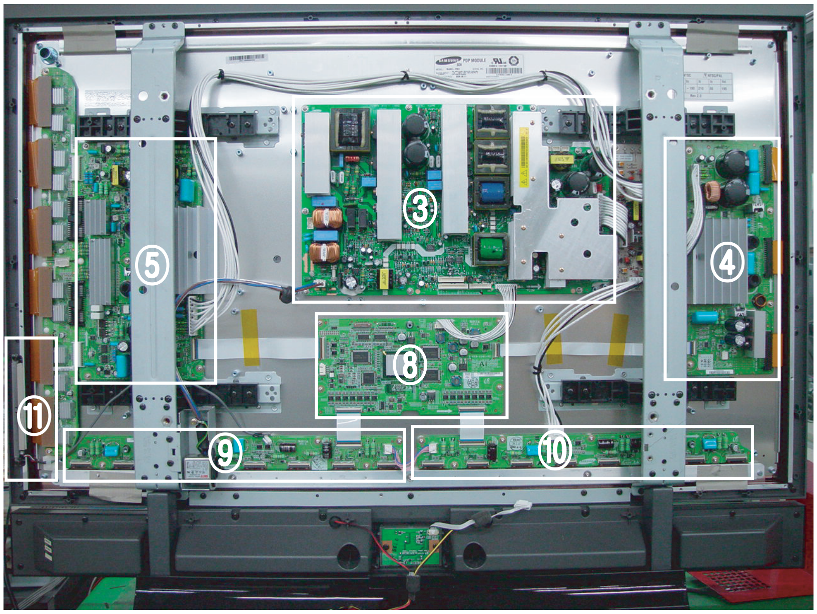
</td></tr>
</table>

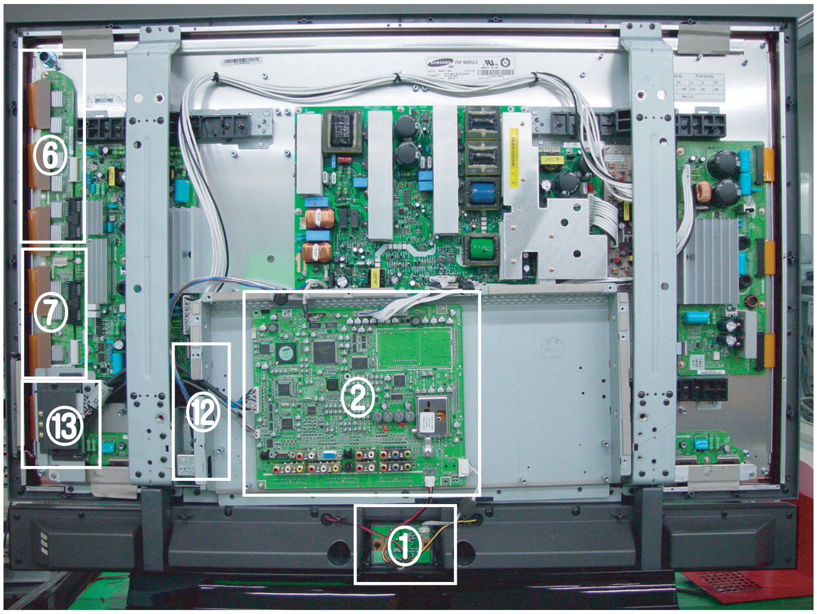
6-2-5 No Video

Symptom	- A normal/cable network analog broadcast screen is blank or abnormal.
Major Checklist	- Check the antenna connection settings (Antenna 1 - Normal/Cable/DTV, Antenna 2 - Only for DTV) - Check the tuner output signal (CVBS). - Check the power input of the Main board.
Troubleshooting Procedures	  Is the antenna connection setting properly configured? No Configure properly Yes ① Check CN0900 pin 2 for +33V No Replace the Main SMPS Yes Replace the Main Board

6-3 Troubleshooting Procedures by ASS'Y

No	Assy Name	Code No.	Description	Major Symptoms
1	ASSY BOARD P-POWER	BN96-02050E	Power Button Board	The remote control does not work properly, LED does not work properly, function key mode does not work properly.
2	ASSY PCB MISC-MAIN	BN94-00755B	Main Board	No power, TV screen is broken(Check tuner CVBS), No power, Abnormal screen for each input source, Sound trouble
3	ASSY PCB P-SMPS	BN96-01801B	SMPS Board	No power, Blank screen, the Relay repeats On and Off.
4	ASSY PDP P-X MAIN BOARD	BN96-02032A	X Drive Board	Blank screen
5	ASSY PDP P-Y MAIN BOARD	BN96-02033A	Y Drive Board	Blank screen
6	ASSY PDP P-Y BUFF UPPER BOARD	BN96-02034A	Y Buffer Upper Board	Upper screen is blank
7	ASSY PDP P-Y BUFF LOWER BOARD	BN96-02216A	Y Buffer Lower Board	Lower screen is blank
8	ASSY PDP P-LOGIC BOARD	BN96-02035A	Logic Board	Blank screen, Screen noise
9	ASSY PDP P-LOGIC E BUFF BOARD	BN96-02036A	Address E Buffer Board	Corresponding Buffer Board block screen is blank.
10	ASSY PDP P-LOGIC F BUFF BOARD	BN96-02037A	Address F Buffer Board	Corresponding Buffer Board block screen is blank.
11	ASSY BOARD P-FUNCTION	BN96-02550A	Function Key Board	The side function key does not work properly
12	ASSY MISC P-INLET	BN96-02369A	Power	The remote control does not work properly, LED does not work properly, function key mode does not work properly.
13	ASSY PCB MISC-SIDE AV	BN94-00732A	SIDE AV BOARD	The side AV Board does not work properly.

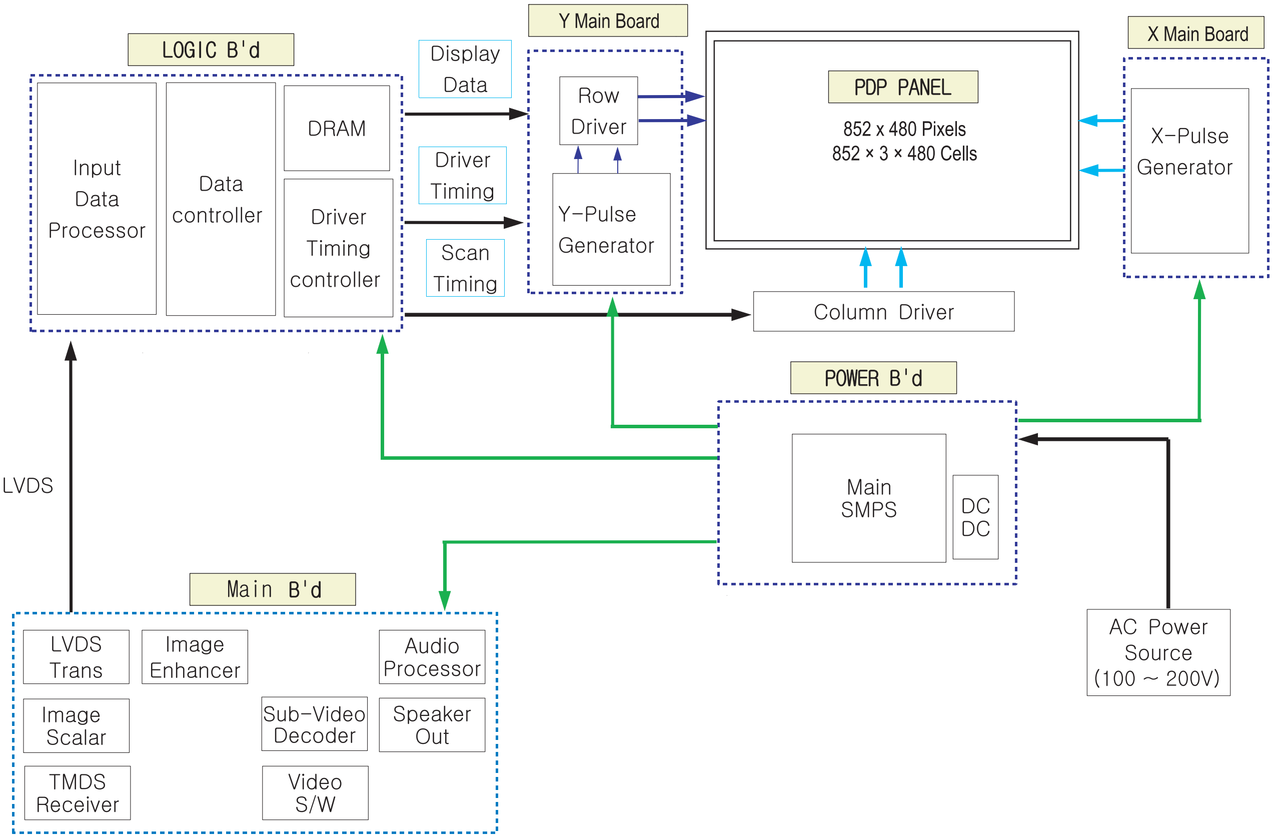




MEMO

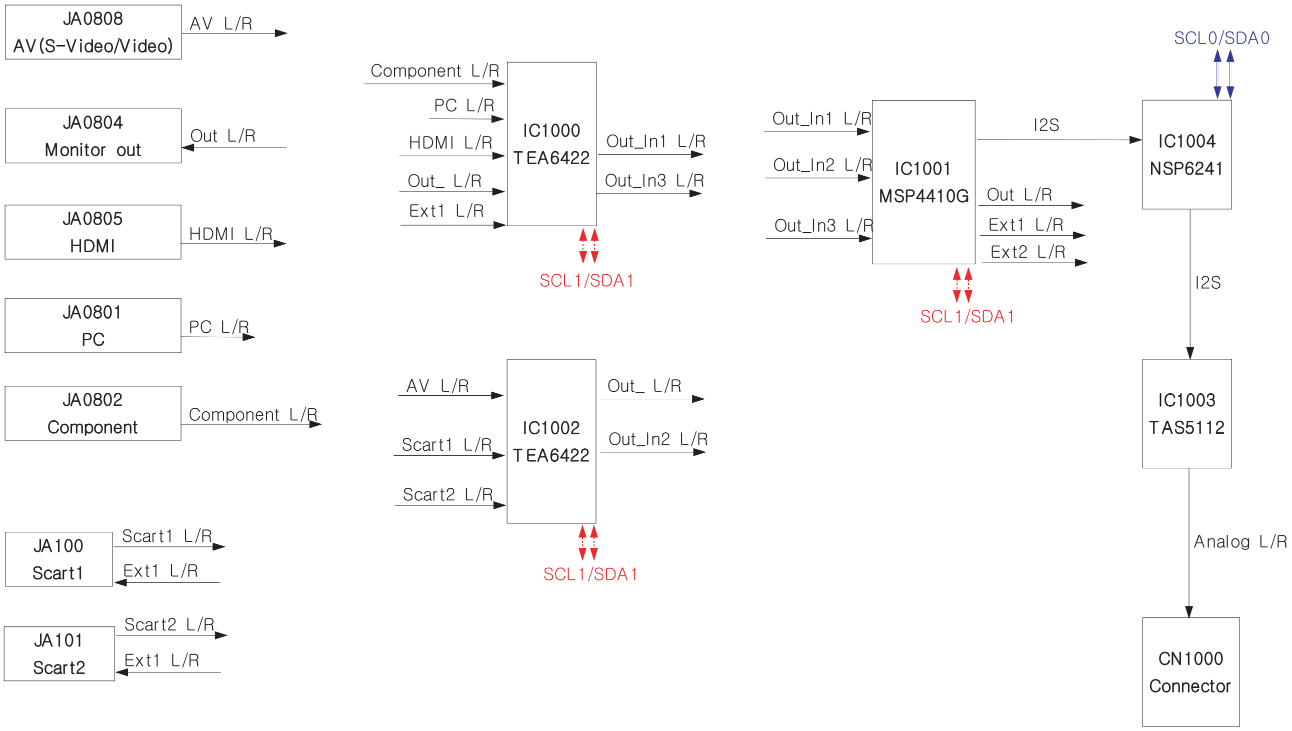
7. Block Diagram

7-1 Overall Block Diagram

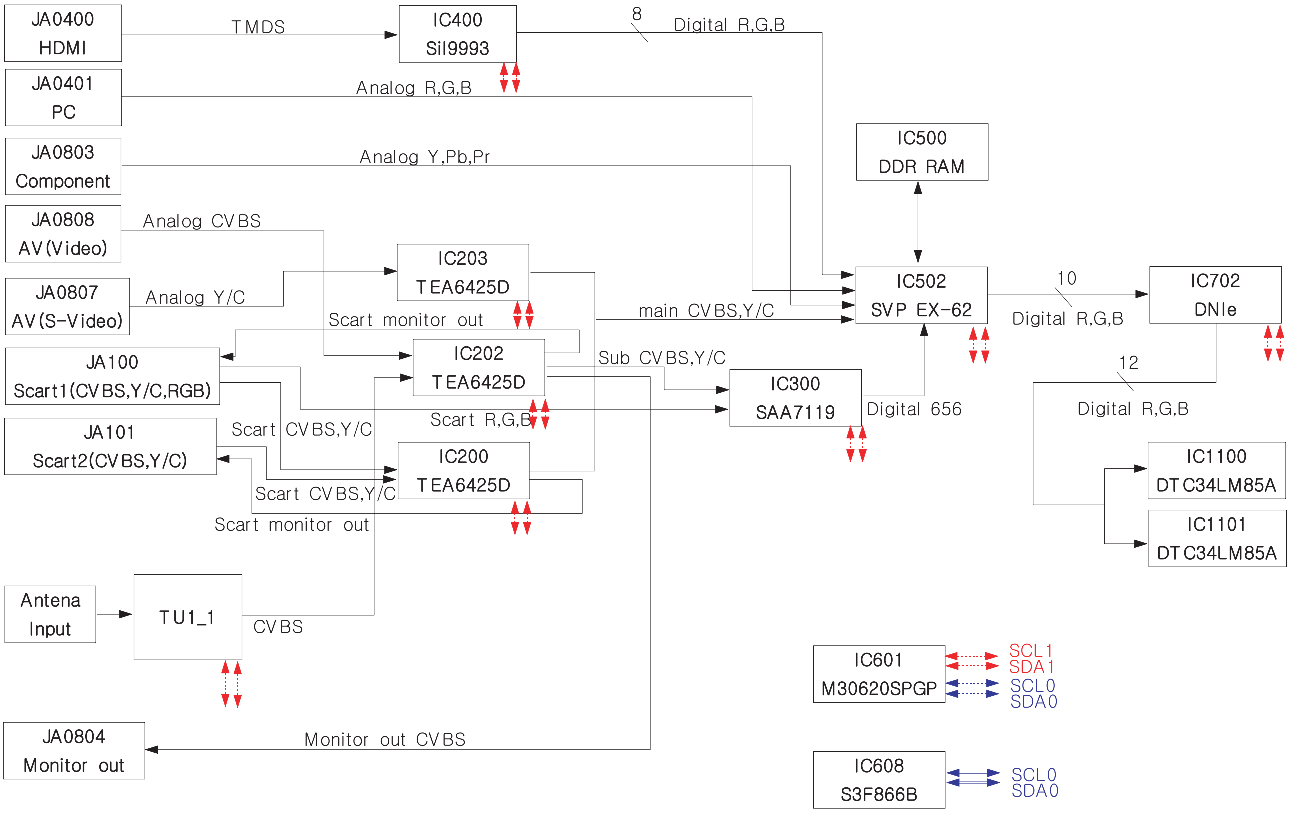

Y Main Board
LOGIC B'd
Display Data
PDP PANEL
852 x 480 Pixels
852 × 3 × 480 Cells
X Main Board
Input Data Processor
Data controller
DRAM
Driver Timing controller
Driver Timing
Scan Timing
Row Driver
Y-Pulse Generator
X-Pulse Generator
Column Driver
POWER B'd
LVDS
Main SMPS
DC DC
Main B'd
LVDS Trans
Image Enhancer
Audio Processor
Image Scalar
Sub-Video Decoder
Speaker Out
TMDS Receiver
Video S/W
AC Power Source (100 ~ 200V)

7-2 Partial Block Diagram

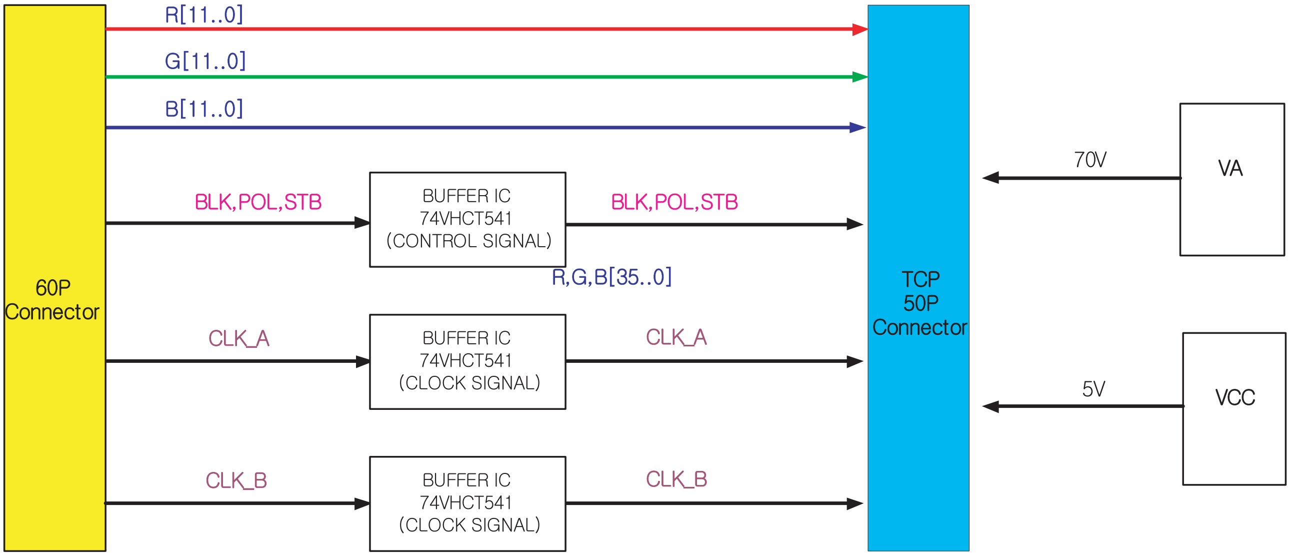
7-2-1 Audio Signal Block Diagram


JA0808
AV(S-Video/Video)
AV L/R
JA0804
Monitor out
Out L/R
JA0805
HDMI
HDMI L/R
JA0801
PC
PC L/R
JA0802
Component
Component L/R
JA100
Scart1
Scart1 L/R
Ext1 L/R
JA101
Scart2
Scart2 L/R
Ext1 L/R
Component L/R
PC L/R
HDMI L/R
Out_ L/R
Ext1 L/R
IC1000
TEA6422
Out_In1 L/R
Out_In3 L/R
SCL1/SDA1
AV L/R
Scart1 L/R
Scart2 L/R
IC1002
TEA6422
Out_ L/R
Out_In2 L/R
SCL1/SDA1
Out_In1 L/R
Out_In2 L/R
Out_In3 L/R
IC1001
MSP4410G
Out L/R
Ext1 L/R
Ext2 L/R
SCL1/SDA1
I2S
SCL0/SDA0
IC1004
NSP6241
I2S
IC1003
TAS5112
Analog L/R
CN1000
Connector

7-2-2 Video Signal Block Diagram

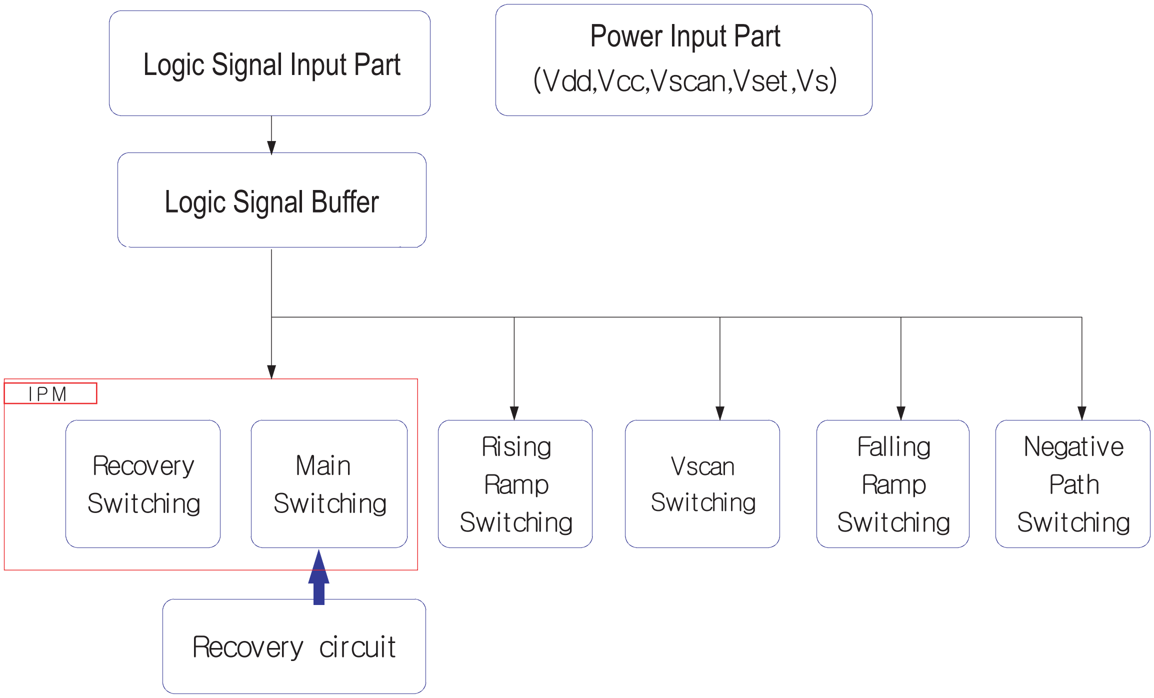

JA0400
HDMI
TMDS
IC400
Sil9993
8
Digital R,G,B
JA0401
PC
Analog R,G,B
JA0803
Component
Analog Y,Pb,Pr
IC500
DDR RAM
JA0808
AV(Video)
Analog CVBS
JA0807
AV(S-Video)
Analog Y/C
IC203
TEA6425D
Scart monitor out
main CVBS,Y/C
IC502
SVP EX-62
10
Digital R,G,B
IC702
DNIe
JA100
Scart1(CVBS,Y/C,RGB)
IC202
TEA6425D
Sub CVBS,Y/C
IC300
SAA7119
Digital 656
12
Digital R,G,B
Scart R,G,B
JA101
Scart2(CVBS,Y/C)
Scart CVBS,Y/C
IC200
TEA6425D
Scart CVBS,Y/C
Scart monitor out
IC1100
DTC34LM85A
IC1101
DTC34LM85A
Antena
Input
TU1_1
CVBS
IC601
M30620SPGP
SCL1
SDA1
SCL0
SDA0
JA0804
Monitor out
Monitor out CVBS
IC608
S3F866B
SCL0
SDA0

7-2-3 Logic Board Block Diagram

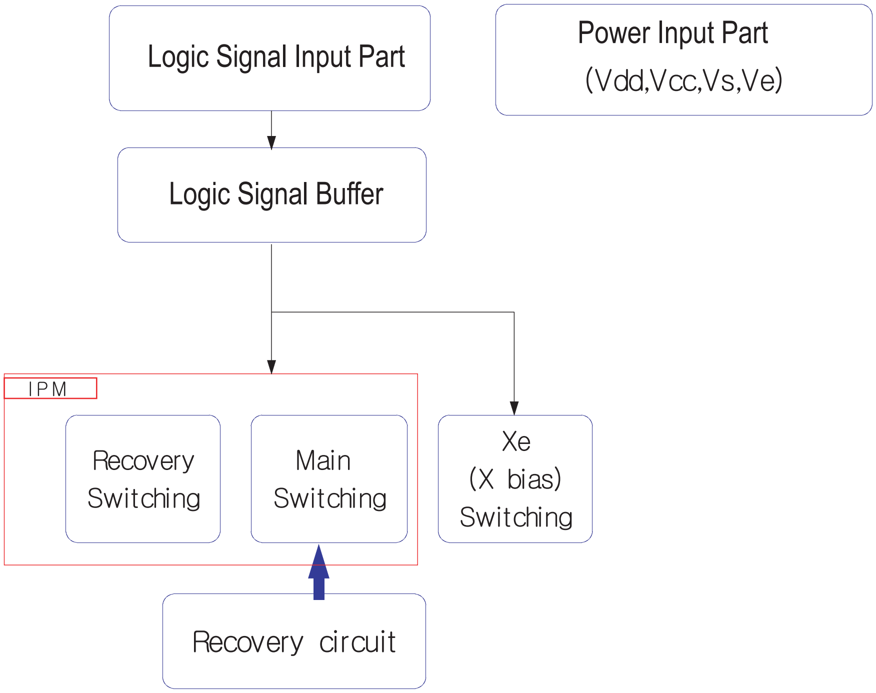

R[11..0]
G[11..0]
B[11..0]
60P Connector
BLK,POL,STB
BUFFER IC 74VHCT541 (CONTROL SIGNAL)
BLK,POL,STB
R,G,B[35..0]
CLK_A
BUFFER IC 74VHCT541 (CLOCK SIGNAL)
CLK_A
CLK_B
BUFFER IC 74VHCT541 (CLOCK SIGNAL)
CLK_B
TCP 50P Connector
70V
VA
5V
VCC

7-2-4 Module Driver Board Block Diagram

1. Y Main Board

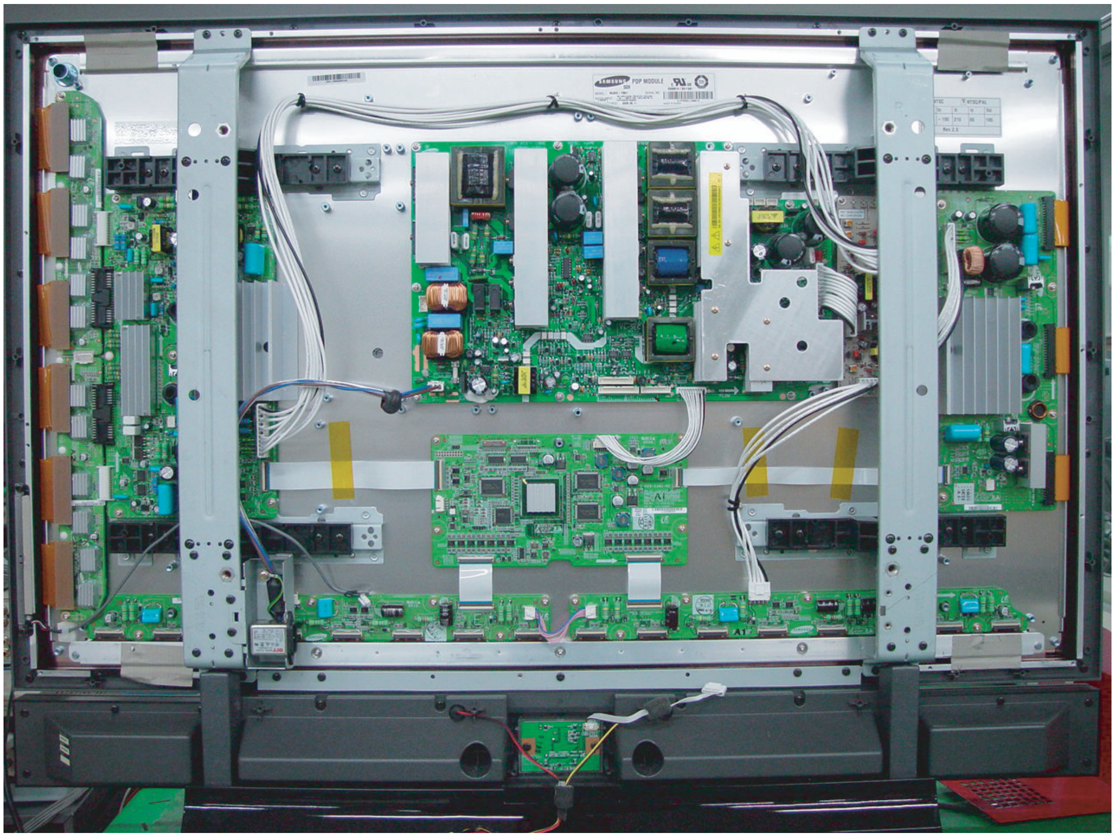

Logic Signal Input Part
Power Input Part
(Vdd,Vcc,Vscan,Vset,Vs)
Logic Signal Buffer
IPM
Recovery Switching
Main Switching
Rising Ramp Switching
Vscan Switching
Falling Ramp Switching
Negative Path Switching
Recovery circuit

2. X Main Board

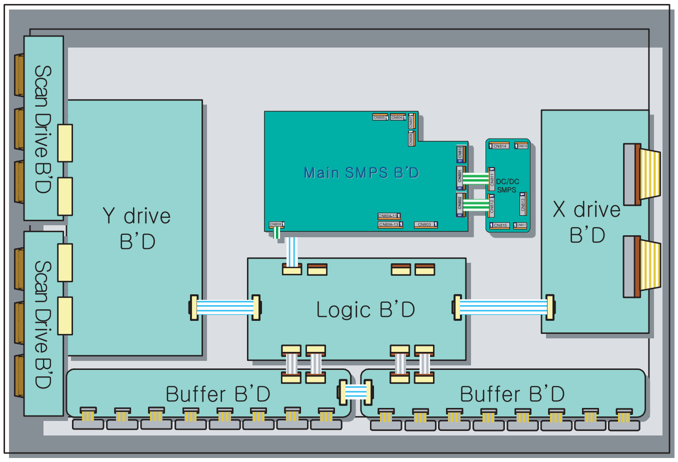

Logic Signal Input Part
Power Input Part
(Vdd,Vcc,Vs,Ve)
Logic Signal Buffer
IPM
Recovery Switching
Main Switching
Xe
(X bias)
Switching
Recovery circuit

8. Wiring Diagram

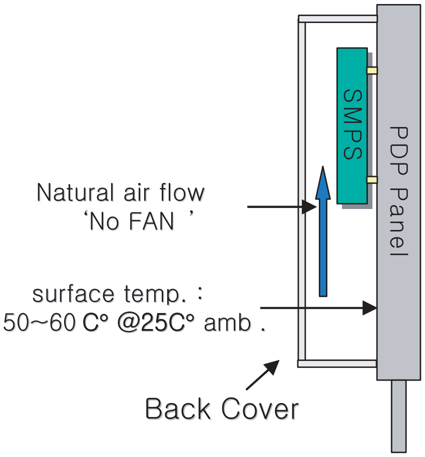
8-1 Overall Wiring



PDP panel back_side view


Scan Drive B'D
Scan Drive B'D
Y drive B'D
Main SMPS B'D
DC/DC SMPS
X drive B'D
Logic B'D
Buffer B'D
Buffer B'D

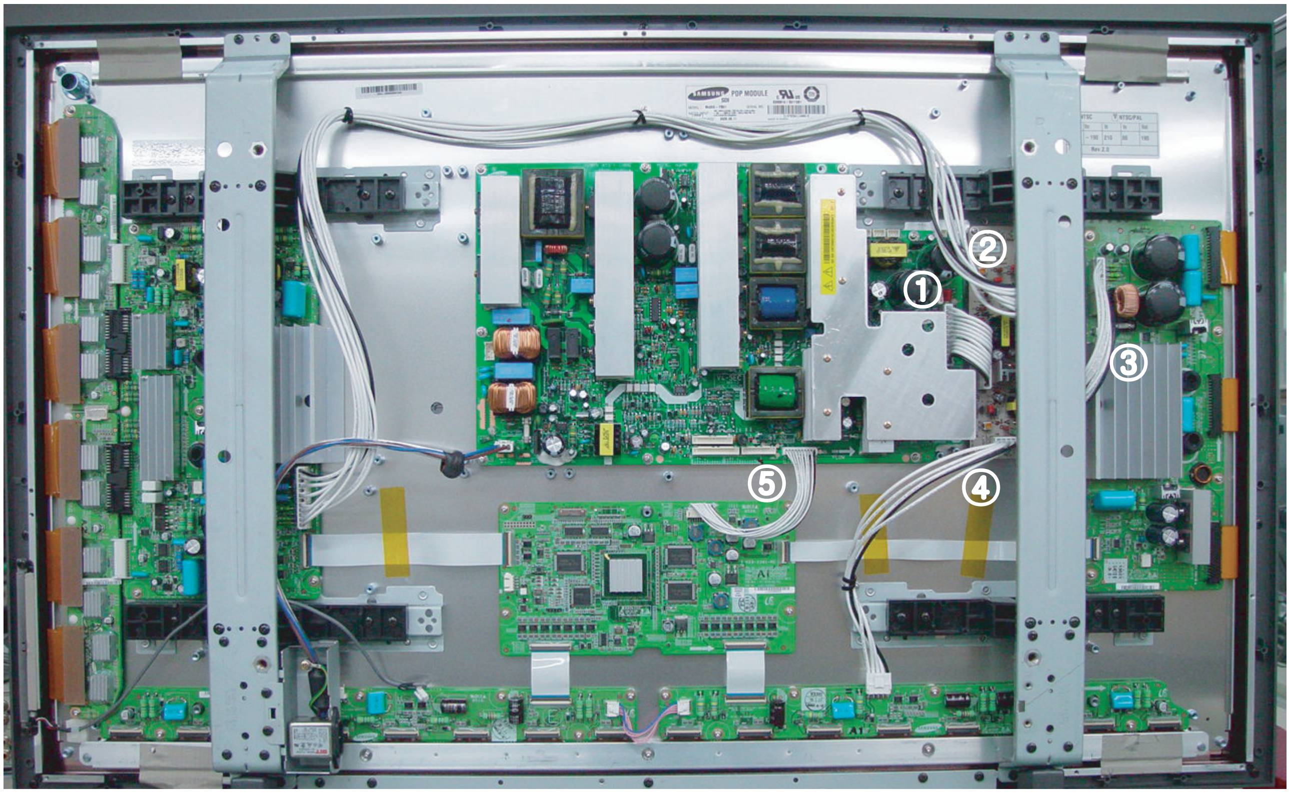
PDP panel side view


SMPS
PDP Panel
Natural air flow
'No FAN'
surface temp. :
50~60 C° @25C° amb .
Back Cover

< Connector Location and Wire harness Connection >

8-2 Partial Wiring

8-2-1 PDP Module ↔ SMPS Wiring



① CN809(Main SMPS) ↔ CN3(DC-DC SMPS)	
Pin No	Signal
1 ■	D5.3V
2	Vg
3	RTN
4	RTN
5	RTN
6	RTN
7	RTN
8	Va
9	Va
10	N/C
11	Vs
12	Vs

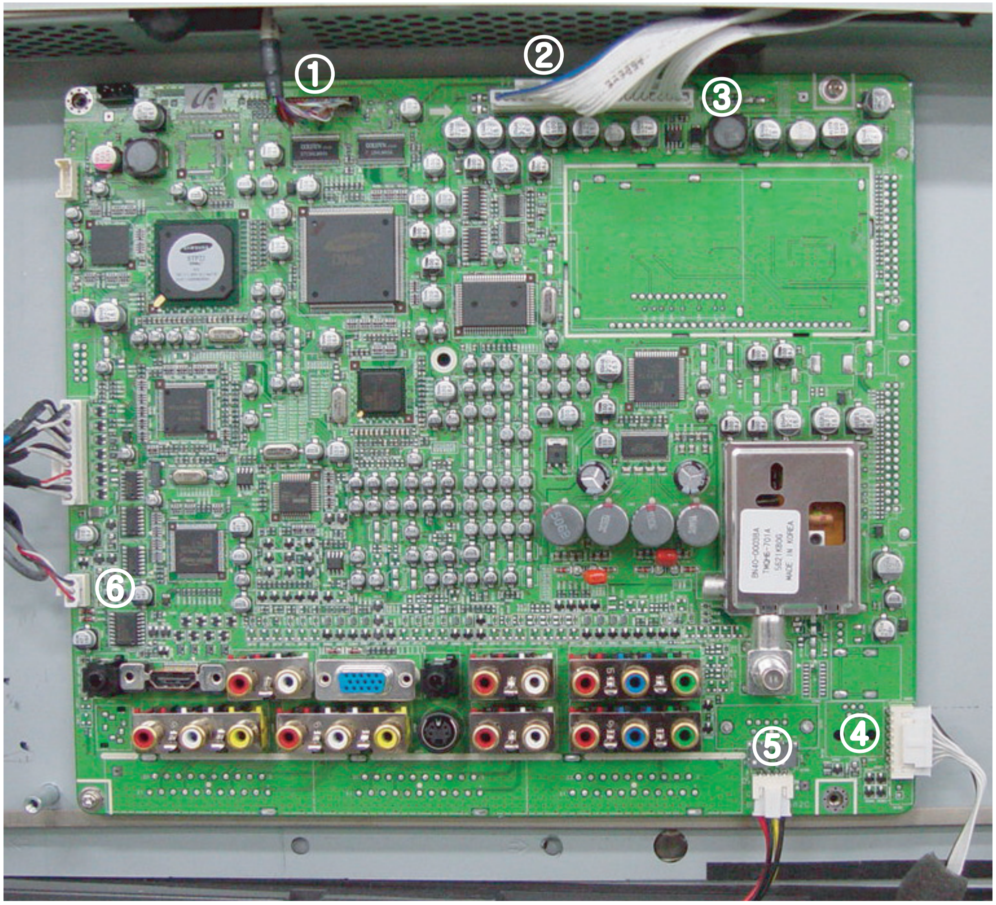
② CN2(DC-DC SMPS) ↔ CN5007(Y B'D)	
Pin No	Signal
1 ■	Vs
2	Vs
3	RTN
4	RTN
5	Vset
6	RTN
7	Vscan
8	RTN
9	Vg
10	D5.3V

③ CN4(DC-DC SMPS) ↔ CN4001(X B'D)	
Pin No	Signal
1 ■	D5.3V
2	Vg
3	RTN
4	RTN
5	Ve
6	RTN
7	RTN
8	Vs
9	Vs

④ CN6(DC-DC SMPS) ↔ CN2509(E-Buffer))	
Pin No	Signal
1■	RTN
2	N.C
3	D5.3V
4	N.C
5	Va

⑤ CN810(Main SMPS) ↔ CN2013(Logic B'D)	
Pin No	Signal
1 ■	STD_5V
2	VS_ON
3	N/C
4	PS_ON
5	RTN
6	D5.3V
7	RTN
8	RTN
9	D5.3V
10	D5.3V

8-2-2 Main Board ↔ SMPS, Side A/V, Sub Tuner Board, Power Button, Speaker Out Wiring



① CN804-1(Main SMPS) ↔ CN0902(Main Board)					
Pin No	Signal	Pin No	Signal	Pin No	Signal
1		12	TXOUT3+	23	TXOUT1B-
2	GND	13	TXOUT3-	24	TXOUT1+
3	PW_SDA0	14	TXCLKOUTB+	25	TXOUT1-
4	GND	15	TXCLKOUTB-	26	GND
5	PW_SCL0	16	TXCLKOUT+	27	GND
6	GND	17	TXCLKOUT-	28	TXOUT0+
7		18	GND	29	TXOUT0-
8	TXOUT0B+	19	GND	30	GND
9	TXOUT0B-	20	TXCLKOUT2+	31	GND
10	I2C_READY	21	TXCLKOUT-	32	GND
11	GND	22	TXOUT1B+	33	GND

② CN804-1(Main SMPS) ↔ CN0902(MAIN Board)	
Pin No	Signal
1 ■	5.3V
2	RTN
3	Vcs
4	Vca
5	RTN
6	RTN
7	12V
8	PS_ON
9	RTN
10	STD_5V
11	FAN_ON
12	FAN_D

③ CN803(Main B'D) ↔ CN0900(MAIN Board)	
Pin No	Signal
1 ■	RTN
2	Vt
3	RTN_amp
4	RTN_amp
5	18Vamp
6	18Vamp
7	RTN
8	12V
9	RTN
10	6.5V

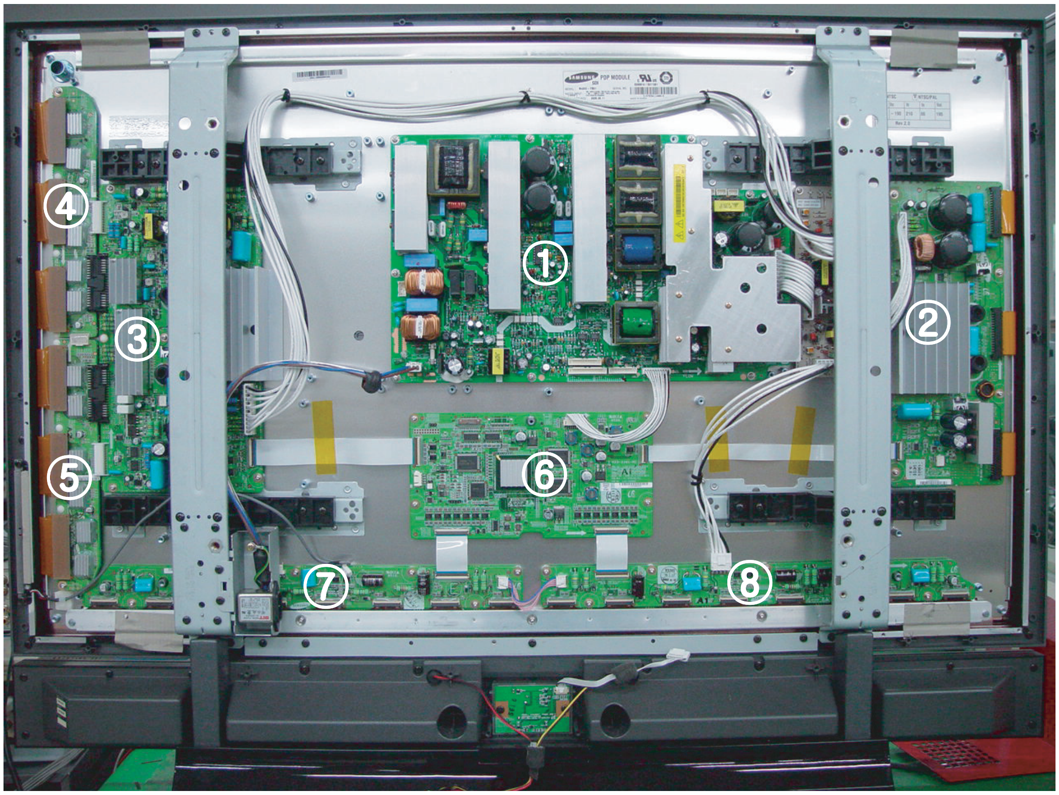
④ CN0901(Main Board) ↔ CN001(Power Button)	
Pin No	Signal
1■	GND
2	LED
3	ST5V
4	GND
5	FRONT_KEY2
6	PW_SDA3
7	PW_SCL3
8	FRONT_IR

⑤ CN1000(Main Board) ↔ Speaker Out	
Pin No	Signal
1	SPK_R+
2	SPK_R-
3	SPK_L+
4	SPK_L-

⑥ CN0903(Main Board) ↔ CN1(Function Key Board)	
Pin No	Signal
1■	FRONT_KEY1
2	FRONT_KEY2
3	GND

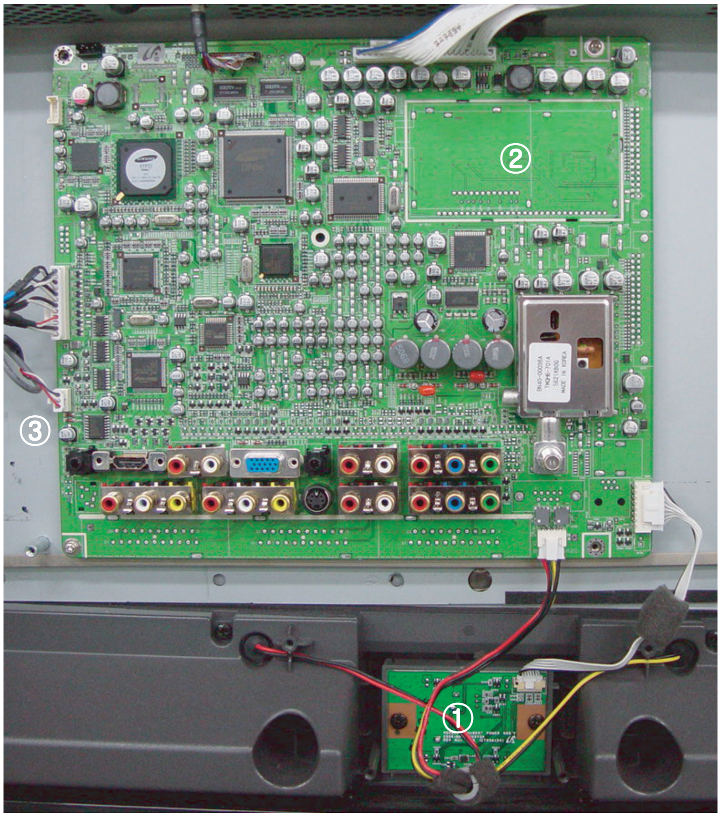
9. PCB Diagram

9-1 PDP Module, SMPS



No	Assy Name	Code No.	Description
①	ASSY PCB P-SMPS	BN96-01801B	SMPS Board
②	ASSY PDP P-X MAIN BOARD	BN96-02032A	X Drive Board
③	ASSY PDP P-Y MAIN BOARD	BN96-02033A	Y Drive Board
④	ASSY PDP P-Y BUFF UPPER BOARD	BN96-02034A	Y Buffer Upper Board
⑤	ASSY PDP P-Y BUFF LOWER BOARD	BN96-02216A	Y Buffer Lower Board
⑥	ASSY PDP P-LOGIC BOARD	BN96-02035A	Logic Board
⑦	ASSY PDP P-LOGIC E BUFF BOARD	BN96-02036A	Logic E Buffer Board
⑧	ASSY PDP P-LOGIC F BUFF BOARD	BN96-02037A	Logic F Buffer Board

9-2 Main Board, Function Key Board, Power Button Board



No	Assy Name	Code No.	Description
①	ASSY BOARD P-POWER & IR	BN96-02050E	Power Button Board
②	ASSY PCB MISC-MAIN	BN94-00755B	Main Board
③	ASSY BOARD P-FUNCTION	BN96-02550A	Function Key Board

d72a-n-sdiag-10-a2.qxd 2005-07-08 오후 12:33 페이지10-1

10. Schematic Diagram

10-1 MAIN

10-1-1 Scart Jack

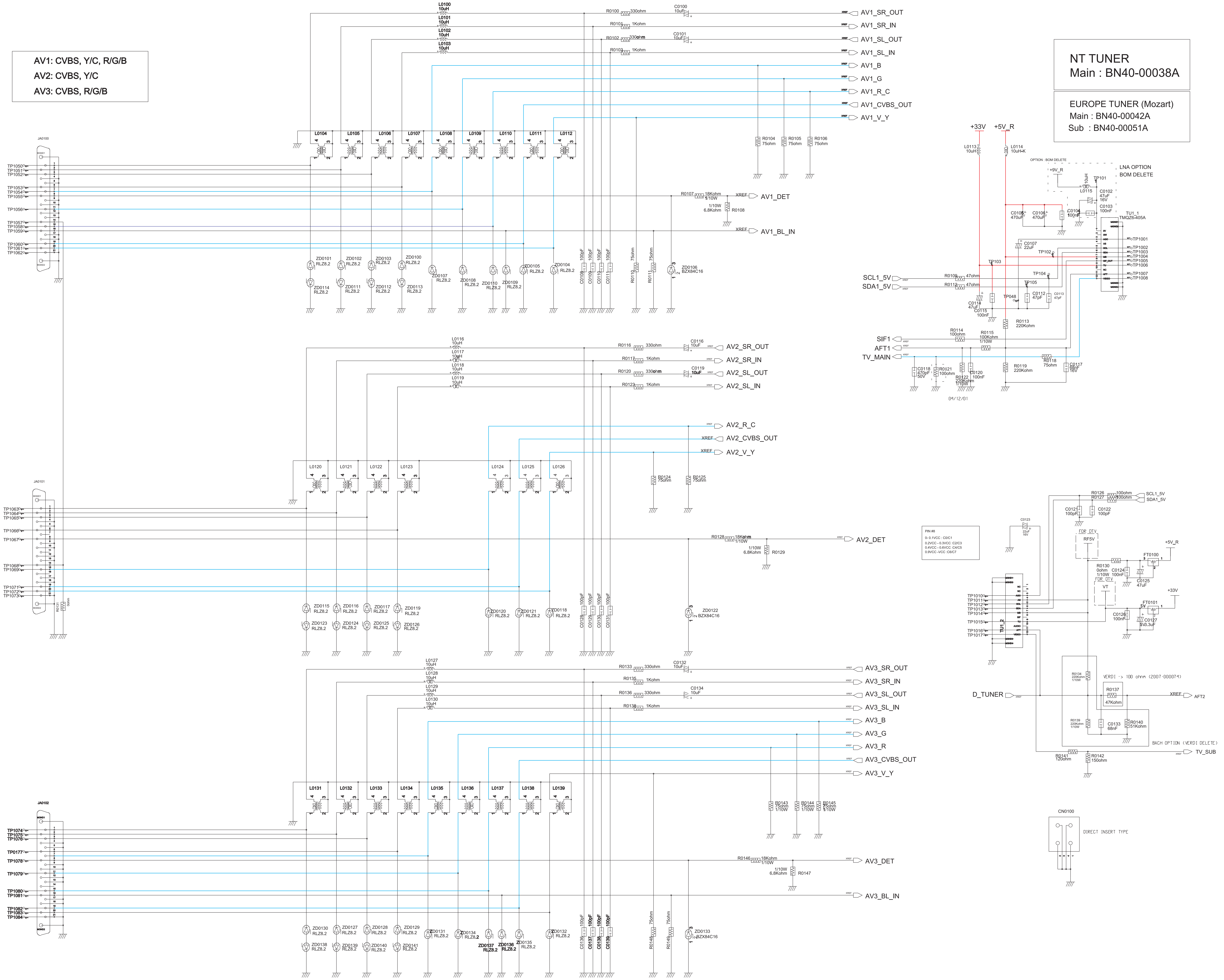
This Document can not be used without Samsung's authorization.

—	Power
—	Signal

AV1: CVBS, Y/C, R/G/B
AV2: CVBS, Y/C
AV3: CVBS, R/G/B

NT TUNER
Main : BN40-00038A

EUROPE TUNER (Mozart)
Main : BN40-00042A
Sub : BN40-00051A


JA0100
JA0101
JA0102
AV1_SR_OUT
AV1_SR_IN
AV1_SL_OUT
AV1_SL_IN
AV1_B
AV1_G
AV1_R_C
AV1_CVBS_OUT
AV1_V_Y
AV1_DET
AV1_BL_IN
AV2_SR_OUT
AV2_SR_IN
AV2_SL_OUT
AV2_SL_IN
AV2_R_C
AV2_CVBS_OUT
AV2_V_Y
AV2_DET
AV3_SR_OUT
AV3_SR_IN
AV3_SL_OUT
AV3_SL_IN
AV3_B
AV3_G
AV3_R
AV3_CVBS_OUT
AV3_V_Y
AV3_DET
AV3_BL_IN
+33V
+5V_R
LNA OPTION
BOM DELETE
OPTION : BOM DELETE
TU1_1
TMQZ6-405A
SCL1_5V
SDA1_5V
SIF1
AFT1
TV_MAIN
D_TUNER
AFT2
TV_SUB
FOR DTV
RF5V
VT
FT0100
FT0101
VERDI -> 100 ohm (2007-000074)
BACH OPTION (VERDI DELETE)
CN0100
DIRECT INSERT TYPE
XREF

10-1-2 Video switch

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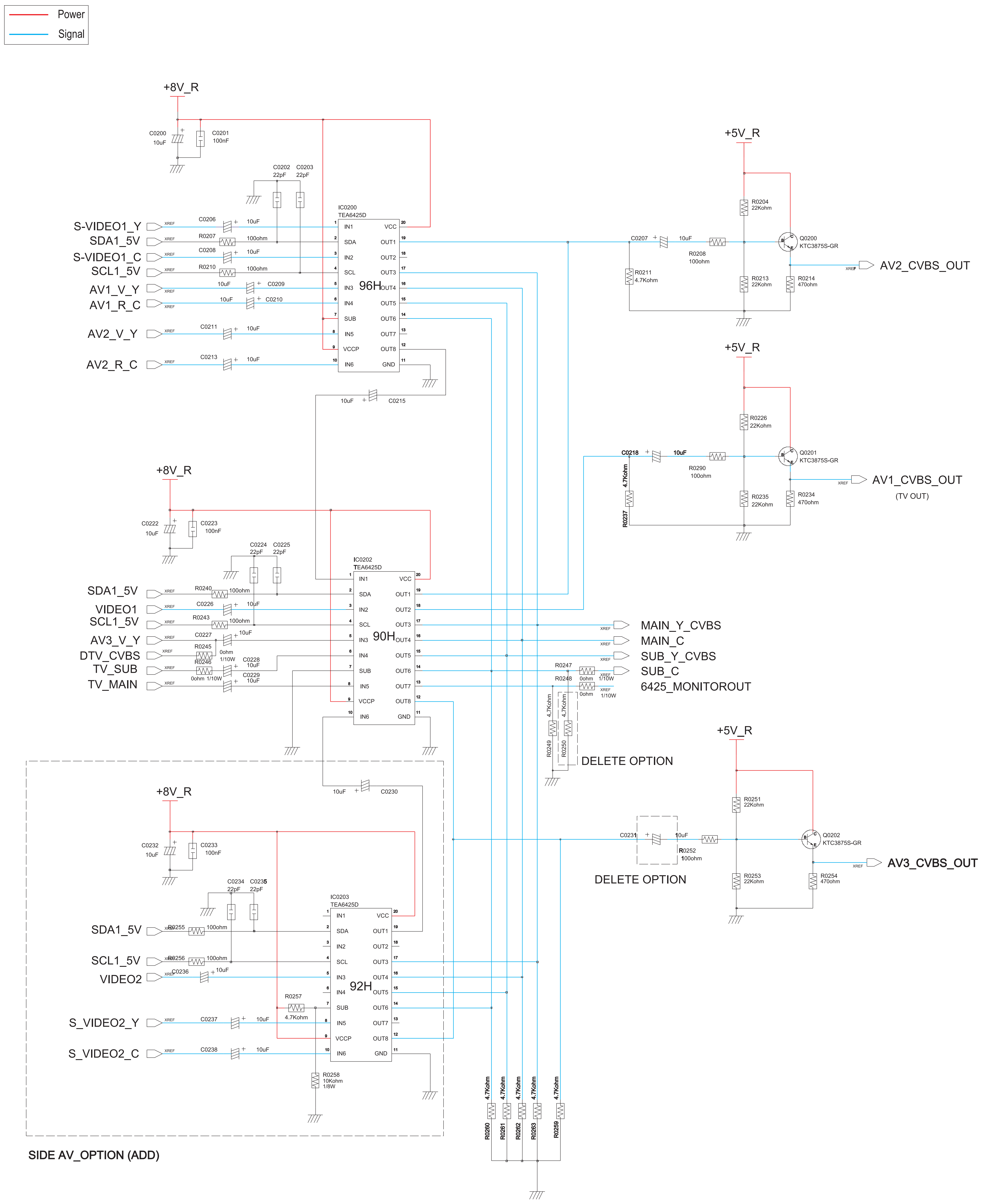
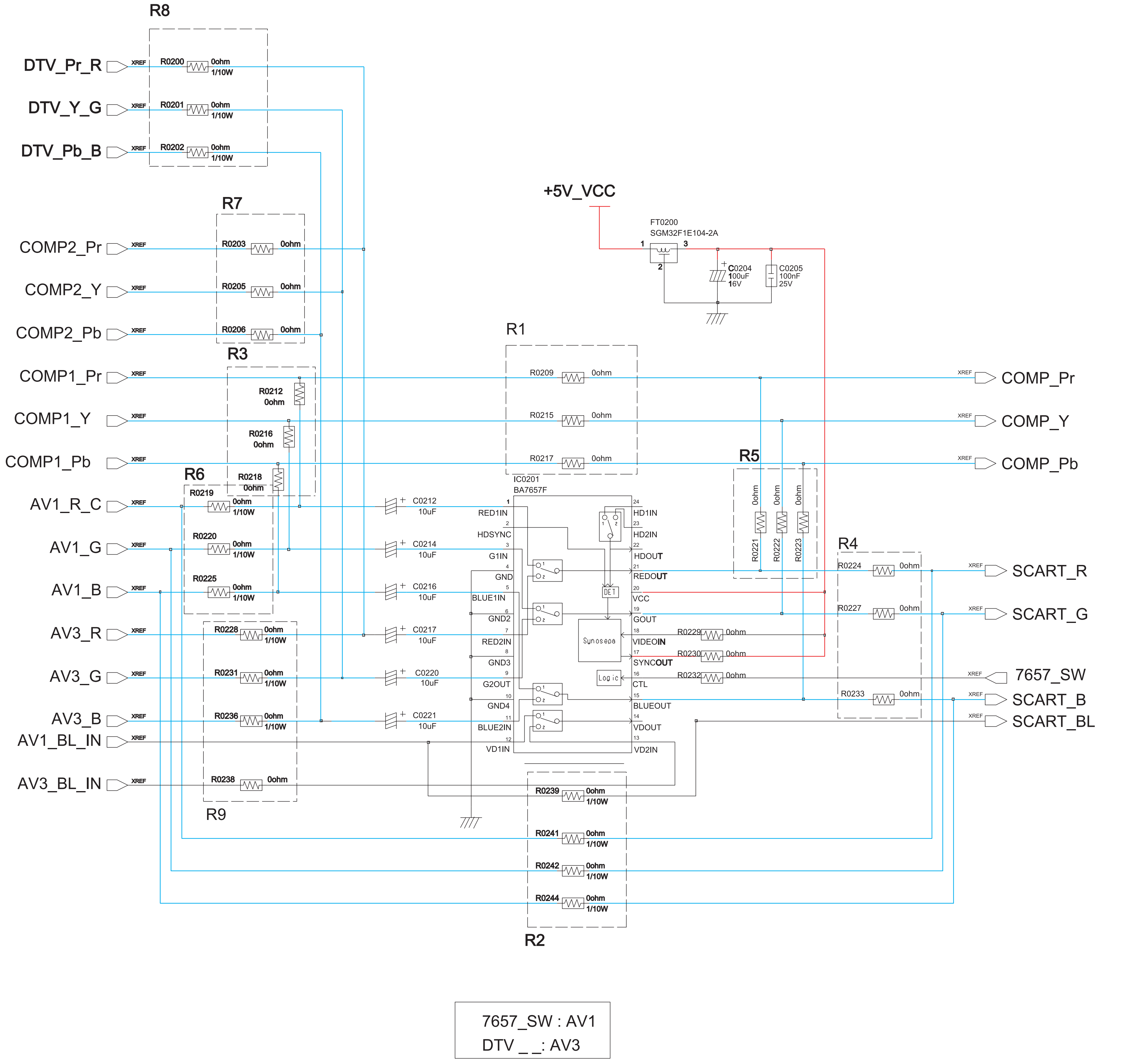

Power
Signal
+8V_R
+5V_R
IC0200
TEA6425D
96H
IC0202
TEA6425D
90H
IC0203
TEA6425D
92H
S-VIDEO1_Y
SDA1_5V
S-VIDEO1_C
SCL1_5V
AV1_V_Y
AV1_R_C
AV2_V_Y
AV2_R_C
AV2_CVBS_OUT
AV1_CVBS_OUT
(TV OUT)
SDA1_5V
VIDEO1
SCL1_5V
AV3_V_Y
DTV_CVBS
TV_SUB
TV_MAIN
MAIN_Y_CVBS
MAIN_C
SUB_Y_CVBS
SUB_C
6425_MONITOROUT
DELETE OPTION
DELETE OPTION
AV3_CVBS_OUT
Q0200
KTC3875S-GR
Q0201
KTC3875S-GR
Q0202
KTC3875S-GR
SDA1_5V
SCL1_5V
VIDEO2
S_VIDEO2_Y
S_VIDEO2_C
SIDE AV_OPTION (ADD)


R8
DTV_Pr_R
DTV_Y_G
DTV_Pb_B
R7
COMP2_Pr
COMP2_Y
COMP2_Pb
R3
COMP1_Pr
COMP1_Y
COMP1_Pb
R6
AV1_R_C
AV1_G
AV1_B
AV3_R
AV3_G
AV3_B
AV1_BL_IN
AV3_BL_IN
R9
+5V_VCC
FT0200
SGM32F1E104-2A
R1
IC0201
BA7657F
R5
R4
COMP_Pr
COMP_Y
COMP_Pb
SCART_R
SCART_G
7657_SW
SCART_B
SCART_BL
R2
7657_SW : AV1
DTV _ _: AV3

		COMP1	COMP2	DTV	Scart1	Scart3	BA7657	R1	R2	R3	R4	R5	R6	R7	R8	R9
Puccini	EUROPE	O	X	X	O	X	X	O	O	X	X	X	X	X	X	O
	ASIA	O	O	X	X	X	O	X	X	O	X	O	X	O	X	O
Verdi	ENGLAND	O	X	O	O	X	O	X	O	O	X	O	X	X	O	X
Bach	EUROPE	O	X	X	O	O	O	O	X	X	O	X	O	O	X	O

10-1-3 SAA7119

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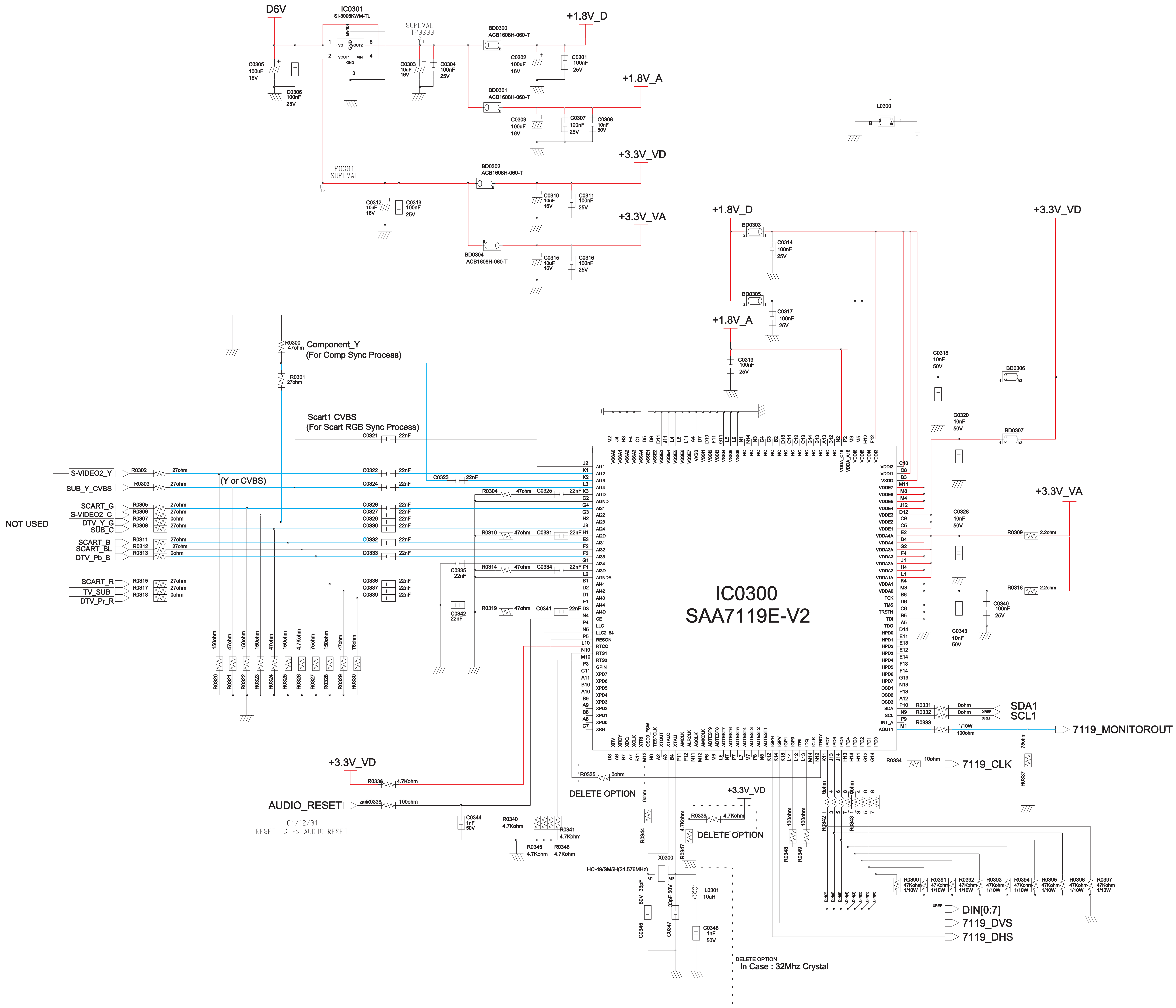
🟥	Power
🟦	Signal


D6V
IC0301
SI-3006KWM-TL
C0305 100uF 16V
C0306 100nF 25V
C0303 10uF 16V
C0304 100nF 25V
SUPLVAL TP0300
BD0300 ACB1608H-060-T
+1.8V_D
C0302 100uF 16V
C0301 100nF 25V
BD0301 ACB1608H-060-T
+1.8V_A
C0309 100uF 16V
C0307 100nF 25V
C0308 10nF 50V
TP0301 SUPLVAL
BD0302 ACB1608H-060-T
+3.3V_VD
C0312 10uF 16V
C0313 100nF 25V
C0310 10uF 16V
C0311 100nF 25V
+3.3V_VA
BD0304 ACB1608H-060-T
C0315 10uF 16V
C0316 100nF 25V
L0300
+1.8V_D
BD0303
C0314 100nF 25V
BD0305
C0317 100nF 25V
+1.8V_A
C0319 100nF 25V
+3.3V_VD
C0318 10nF 50V
BD0306
C0320 10nF 50V
BD0307
+3.3V_VA
C0328 10nF 50V
R0309 2.2ohm
R0316 2.2ohm
C0340 100nF 25V
C0343 10nF 50V
R0300 47ohm
Component_Y
(For Comp Sync Process)
R0301 27ohm
Scart1 CVBS
(For Scart RGB Sync Process)
C0321 22nF
S-VIDEO2_Y
SUB_Y_CVBS
SCART_G
S-VIDEO2_C
DTV_Y_G
SUB_C
SCART_B
SCART_BL
DTV_Pb_B
SCART_R
TV_SUB
DTV_Pr_R
NOT USED
(Y or CVBS)
R0302 27ohm
R0303 27ohm
R0305 27ohm
R0306 27ohm
R0307 0ohm
R0308 27ohm
R0311 27ohm
R0312 27ohm
R0313 0ohm
R0315 27ohm
R0317 27ohm
R0318 0ohm
C0322 22nF
C0324 22nF
C0323 22nF
C0326 22nF
C0327 22nF
C0329 22nF
C0330 22nF
C0332 22nF
C0333 22nF
C0336 22nF
C0337 22nF
C0339 22nF
R0304 47ohm C0325 22nF
R0310 47ohm C0331 22nF
R0314 47ohm C0334 22nF
R0319 47ohm C0341 22nF
C0335 22nF
C0342 22nF
R0320 150ohm
R0321 47ohm
R0322 150ohm
R0323 150ohm
R0324 47ohm
R0325 150ohm
R0326 4.7Kohm
R0327 75ohm
R0328 150ohm
R0329 47ohm
R0330 75ohm
IC0300
SAA7119E-V2
SDA1
SCL1
R0331 0ohm
R0332 0ohm
R0333 1/10W 100ohm
7119_MONITOROUT
R0337 75ohm
R0334 10ohm
7119_CLK
+3.3V_VD
R0336 4.7Kohm
AUDIO_RESET
R0338 100ohm
04/12/01
RESET_IC -> AUDIO_RESET
C0344 1nF 50V
R0340 4.7Kohm
R0341 4.7Kohm
R0345 4.7Kohm
R0346 4.7Kohm
R0335 0ohm
DELETE OPTION
R0344 0ohm
+3.3V_VD
R0339 4.7Kohm
DELETE OPTION
R0347 4.7Kohm
X0300
HC-49/SM5H(24.576MHz)
C0345 33pF 50V
C0347 33pF 50V
L0301 10uH
C0346 1nF 50V
DELETE OPTION
In Case : 32Mhz Crystal
R0348 100ohm
R0349 100ohm
R0342 0ohm
R0343 0ohm
R0390 47Kohm 1/10W
R0391 47Kohm 1/10W
R0392 47Kohm 1/10W
R0393 47Kohm 1/10W
R0394 47Kohm 1/10W
R0395 47Kohm 1/10W
R0396 47Kohm 1/10W
R0397 47Kohm 1/10W
DIN[0:7]
7119_DVS
7119_DHS

10-1-4 HDMI_PC IN

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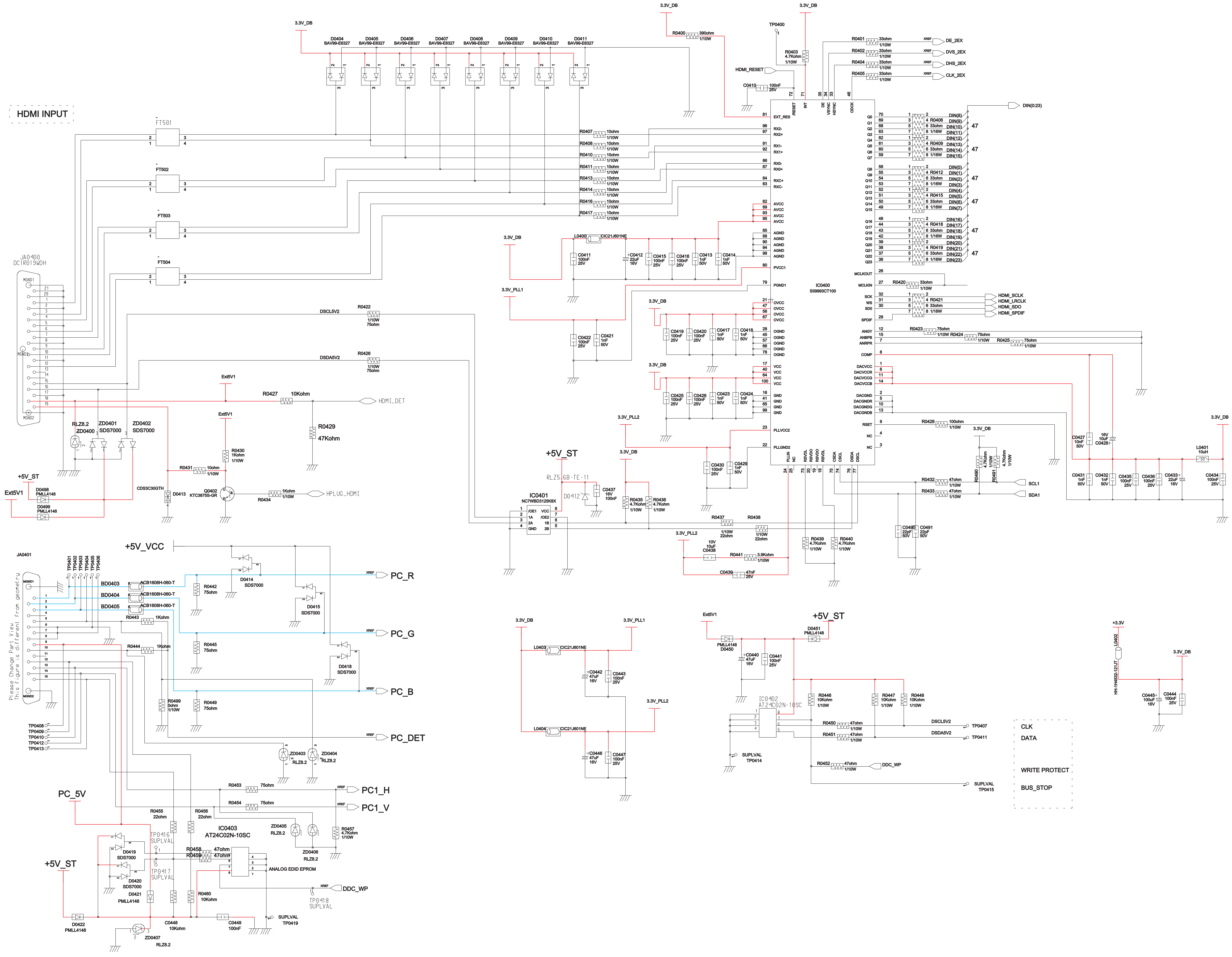
🟥	Power
🟦	Signal


HDMI INPUT
JA0400
DC1R019WDH
FT501
FT502
FT503
FT504
3.3V_DB
3.3V_PLL1
3.3V_PLL2
Ext5V1
+5V_ST
+5V_VCC
IC0400
SII9993CT100
IC0401
NC7WBD3125K8X
IC0402
AT24C02N-10SC
IC0403
AT24C02N-10SC
ANALOG EDID EPROM
HDMI_RESET
HDMI_DET
HPLUG_HDMI
DE_2EX
DVS_2EX
DHS_2EX
CLK_2EX
DIN(0:23)
HDMI_SCLK
HDMI_LRCLK
HDMI_SDO
HDMI_SPDIF
SCL1
SDA1
DSCL5V2
DSDA5V2
DDC_WP
JA0401
PC_R
PC_G
PC_B
PC_DET
PC1_H
PC1_V
PC_5V
SUPLVAL
CLK
DATA
WRITE PROTECT
BUS_STOP
Please Change Part View. This Figure is different from geometry

10-1-5 SVP EX

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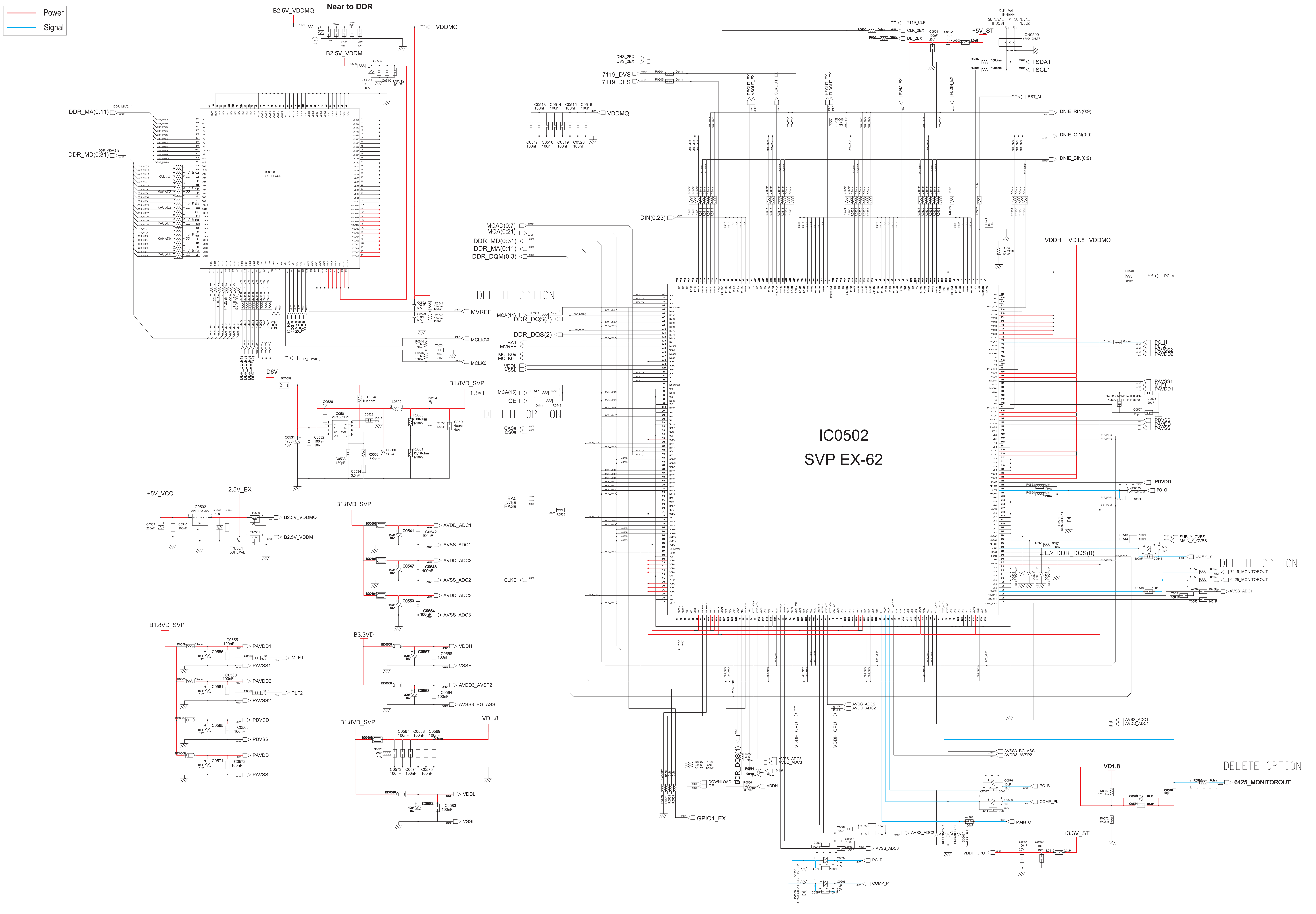
Power
Signal
Near to DDR
B2.5V_VDDMQ
VDDMQ
B2.5V_VDDM
DDR_MA(0:11)
DDR_MD(0:31)
IC0500
DDR_DQM(0:3)
BA0
BA1
CLKE
CAS#
RAS#
WE#
CS#
MVREF
MCLK0#
MCLK0
DELETE OPTION
D6V
B1.8VD_SVP
IC0501
MP1583DN
+5V_VCC
2.5V_EX
IC0503
B2.5V_VDDMQ
B2.5V_VDDM
AVDD_ADC1
AVSS_ADC1
AVDD_ADC2
AVSS_ADC2
AVDD_ADC3
AVSS_ADC3
B3.3VD
VDDH
VSSH
AVDD3_AVSP2
AVSS3_BG_ASS
VD1.8
VDDL
VSSL
PAVDD1
PAVSS1
MLF1
PAVDD2
PAVSS2
PLF2
PDVDD
PDVSS
PAVDD
PAVSS
MCAD(0:7)
MCA(0:21)
DDR_MD(0:31)
DDR_MA(0:11)
DDR_DQM(0:3)
MCA(14)
DDR_DQS(3)
DDR_DQS(2)
MCA(15)
CE
7119_CLK
CLK_2EX
DE_2EX
+5V_ST
CN0500
SDA1
SCL1
DHS_2EX
DVS_2EX
7119_DVS
7119_DHS
RST_M
DNIE_RIN(0:9)
DNIE_GIN(0:9)
DNIE_BIN(0:9)
DIN(0:23)
VDDH
VD1.8
VDDMQ
PC_V
PC_H
PLF2
PAVSS2
PAVDD2
PAVSS1
MLF1
PAVDD1
PDVSS
PAVDD
PAVSS
PDVDD
PC_G
IC0502
SVP EX-62
SUB_Y_CVBS
MAIN_Y_CVBS
COMP_Y
DDR_DQS(0)
7119_MONITOROUT
6425_MONITOROUT
AVSS_ADC1
AVSS_ADC2
AVDD_ADC2
AVSS_ADC1
AVDD_ADC1
AVSS3_BG_ASS
AVDD3_AVSP2
DDR_DQS(1)
AVSS_ADC3
AVDD_ADC3
VDDH_CPU
DOWNLOAD_OE
INT#
ALE
VDDH
GPIO1_EX
PC_B
COMP_Pb
MAIN_C
AVSS_ADC2
AVSS_ADC3
PC_R
COMP_Pr
VDDH_CPU
+3.3V_ST
6425_MONITOROUT

10-1-6 MICOM

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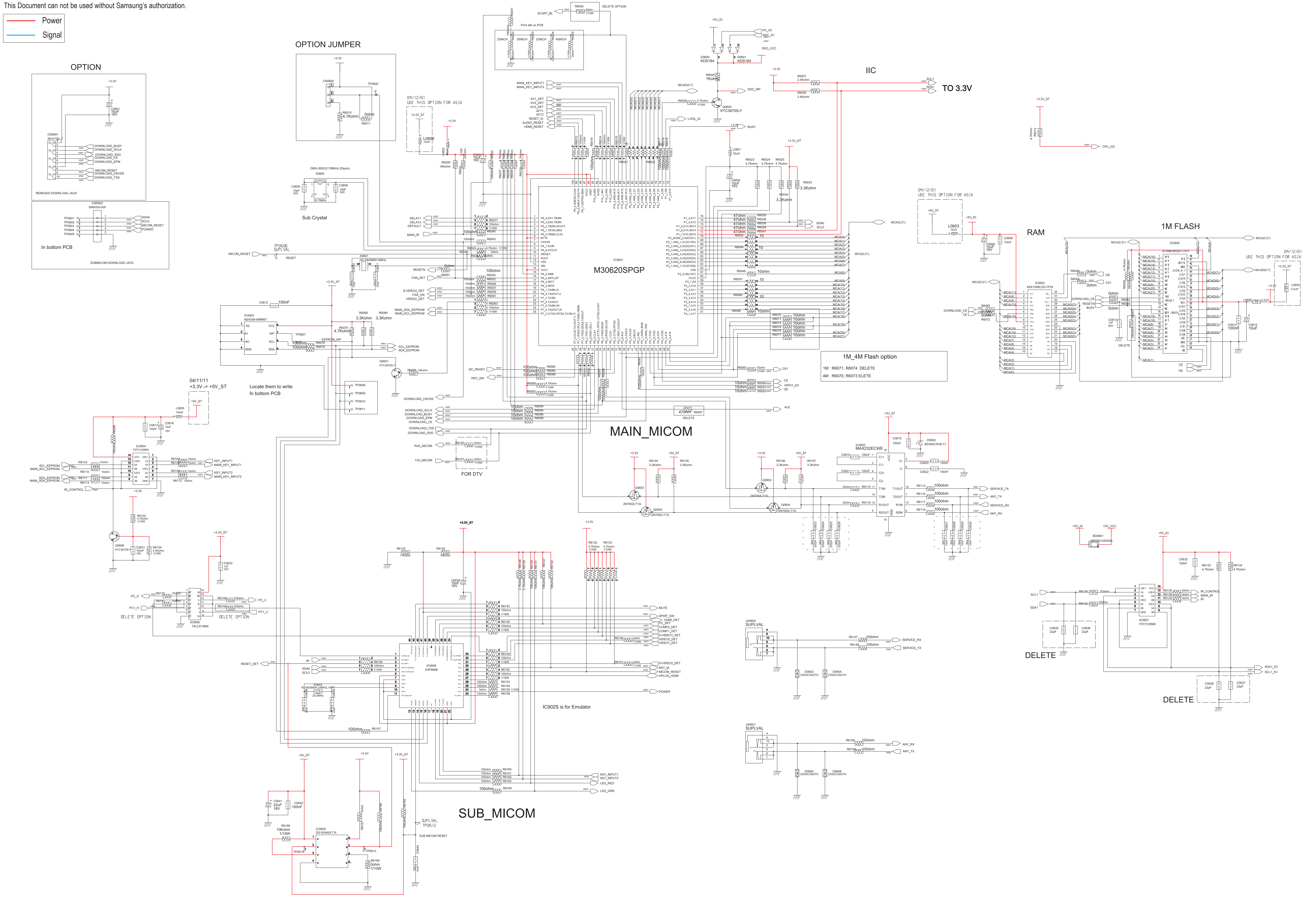
Power
Signal
OPTION
RENESAS DOWNLOAD JACK
In bottom PCB
SUBMICOM DOWNLOAD JACK
OPTION JUMPER
Sub Crystal
04/12/01
USE THIS OPTION FOR ASIA
Print silk on PCB
DELETE OPTION
IIC
TO 3.3V
RAM
1M FLASH
1M_4M Flash option
1M : R6071, R6074 DELETE
4M : R6070, R6073 ELETE
IC0601
M30620SPGP
MAIN_MICOM
IC0602
K6X1008C2D-TF55
IC0600
IC0603
M24256-WMN6T
IC0604
FST3125MX
IC0605
MAX232ECWE
IC0606
74LCX14MX
IC0607
FST3125MX
IC0608
S3F866B
IC0609
DS1834AS/T.R
04/11/11
+3.3V -> +5V_ST
Locate them to write
In bottom PCB
FOR DTV
DELETE OPTION
IC902S is for Emulator
SUB_MICOM
SUB MICOM RESET
DELETE
JA0600
SUPLVAL
JA0601
SUPLVAL
Q0600
KTC3875S-Y
D0600
KDS184
D0601
KDS184
X0600
DMX-26S(32.768KHz,20ppm)
X0601
HC-49/SMSH 8MHz

10-1-7 DNIe Lite

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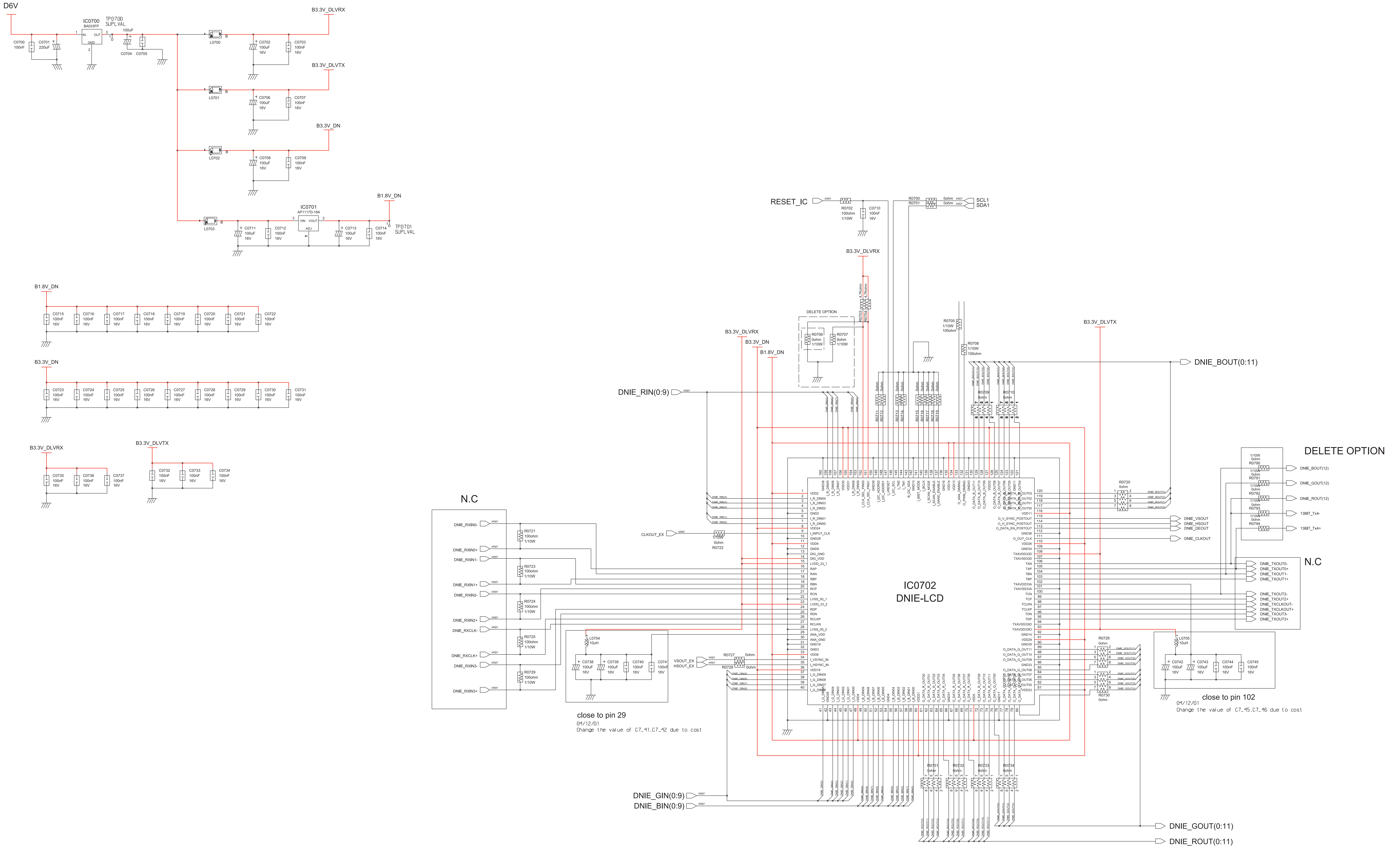
🟥	Power
🟦	Signal


D6V
IC0700
BA033FP
TP0700
SUPLVAL
B3.3V_DLVRX
B3.3V_DLVTX
B3.3V_DN
B1.8V_DN
IC0701
AP1117D-18A
TP0701
SUPLVAL
L0700
L0701
L0702
L0703
RESET_IC
SCL1
SDA1
DELETE OPTION
DNIE_RIN(0:9)
DNIE_BOUT(0:11)
N.C
DNIE_RXIN0-
DNIE_RXIN0+
DNIE_RXIN1-
DNIE_RXIN1+
DNIE_RXIN2-
DNIE_RXIN2+
DNIE_RXCLK-
DNIE_RXCLK+
DNIE_RXIN3-
DNIE_RXIN3+
CLKOUT_EX
VSOUT_EX
HSOUT_EX
IC0702
DNIE-LCD
DNIE_VSOUT
DNIE_HSOUT
DNIE_DEOUT
DNIE_CLKOUT
DNIE_BOUT(12)
DNIE_GOUT(12)
DNIE_ROUT(12)
13BIT_Tx4-
13BIT_Tx4+
DNIE_TXOUT0-
DNIE_TXOUT0+
DNIE_TXOUT1-
DNIE_TXOUT1+
DNIE_TXOUT2-
DNIE_TXOUT2+
DNIE_TXCLKOUT-
DNIE_TXCLKOUT+
DNIE_TXOUT3-
DNIE_TXOUT3+
close to pin 29
04/12/01
Change the value of C7_41,C7_42 due to cost
close to pin 102
04/12/01
Change the value of C7_45,C7_46 due to cost
DNIE_GIN(0:9)
DNIE_BIN(0:9)
DNIE_GOUT(0:11)
DNIE_ROUT(0:11)

d72a-n-sdiag-10-a2.qxd 2005-07-08 오후 12:34 페이지10-8

10-1-8 JACK IN/OUT

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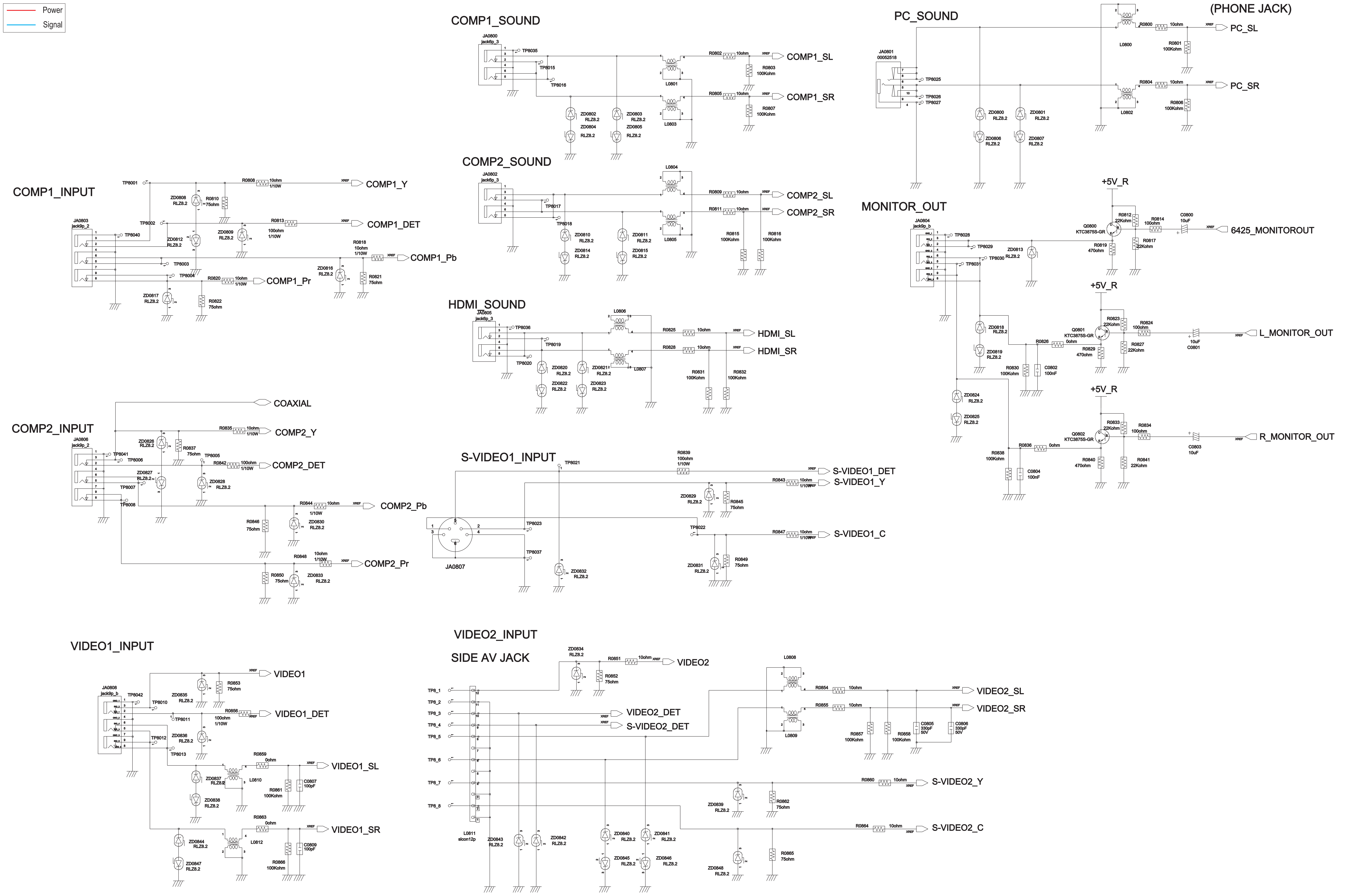
Power
Signal
COMP1_SOUND
JA0800
jack6p_3
TP8035
TP8015
TP8016
L0801
L0803
R0802 10ohm
R0803 100Kohm
R0805 10ohm
R0807 100Kohm
ZD0802 RLZ8.2
ZD0803 RLZ8.2
ZD0804 RLZ8.2
ZD0805 RLZ8.2
COMP1_SL
COMP1_SR
PC_SOUND
(PHONE JACK)
JA0801
00052518
TP8025
TP8026
TP8027
L0800
L0802
R0800 10ohm
R0801 100Kohm
R0804 10ohm
R0806 100Kohm
ZD0800 RLZ8.2
ZD0801 RLZ8.2
ZD0806 RLZ8.2
ZD0807 RLZ8.2
PC_SL
PC_SR
COMP1_INPUT
JA0803
jack9p_2
TP8001
TP8002
TP8040
TP8003
TP8004
R0808 10ohm 1/10W
R0810 75ohm
R0813 100ohm 1/10W
R0818 10ohm 1/10W
R0820 10ohm 1/10W
R0821 75ohm
R0822 75ohm
ZD0808 RLZ8.2
ZD0809 RLZ8.2
ZD0812 RLZ8.2
ZD0816 RLZ8.2
ZD0817 RLZ8.2
COMP1_Y
COMP1_DET
COMP1_Pb
COMP1_Pr
COMP2_SOUND
JA0802
jack6p_3
TP8017
TP8018
L0804
L0805
R0809 10ohm
R0811 10ohm
R0815 100Kohm
R0816 100Kohm
ZD0810 RLZ8.2
ZD0811 RLZ8.2
ZD0814 RLZ8.2
ZD0815 RLZ8.2
COMP2_SL
COMP2_SR
MONITOR_OUT
JA0804
jack9p_b
TP8028
TP8029
TP8030
TP8031
+5V_R
Q0800 KTC3875S-GR
Q0801 KTC3875S-GR
Q0802 KTC3875S-GR
R0812 22Kohm
R0814 100ohm
R0817 22Kohm
R0819 470ohm
C0800 10uF
ZD0813 RLZ8.2
6425_MONITOROUT
ZD0818 RLZ8.2
ZD0819 RLZ8.2
R0823 22Kohm
R0824 100ohm
R0826 0ohm
R0827 22Kohm
R0829 470ohm
R0830 100Kohm
C0802 100nF
C0801 10uF
L_MONITOR_OUT
ZD0824 RLZ8.2
ZD0825 RLZ8.2
R0833 22Kohm
R0834 100ohm
R0836 0ohm
R0838 100Kohm
R0840 470ohm
R0841 22Kohm
C0804 100nF
C0803 10uF
R_MONITOR_OUT
HDMI_SOUND
JA0805
jack6p_3
TP8036
TP8019
TP8020
L0806
L0807
R0825 10ohm
R0828 10ohm
R0831 100Kohm
R0832 100Kohm
ZD0820 RLZ8.2
ZD0821 RLZ8.2
ZD0822 RLZ8.2
ZD0823 RLZ8.2
HDMI_SL
HDMI_SR
COAXIAL
COMP2_INPUT
JA0806
jack9p_2
TP8041
TP8006
TP8005
TP8007
TP8008
R0835 10ohm 1/10W
R0837 75ohm
R0842 100ohm 1/10W
R0844 10ohm 1/10W
R0846 75ohm
R0848 10ohm 1/10W
R0850 75ohm
ZD0826 RLZ8.2
ZD0827 RLZ8.2
ZD0828 RLZ8.2
ZD0830 RLZ8.2
ZD0833 RLZ8.2
COMP2_Y
COMP2_DET
COMP2_Pb
COMP2_Pr
S-VIDEO1_INPUT
TP8021
TP8022
TP8023
TP8037
JA0807
R0839 100ohm 1/10W
R0843 10ohm 1/10W
R0845 75ohm
R0847 10ohm 1/10W
R0849 75ohm
ZD0829 RLZ8.2
ZD0831 RLZ8.2
ZD0832 RLZ8.2
S-VIDEO1_DET
S-VIDEO1_Y
S-VIDEO1_C
VIDEO1_INPUT
JA0808
jack9p_b
TP8042
TP8010
TP8011
TP8012
TP8013
R0853 75ohm
R0856 100ohm 1/10W
R0859 0ohm
R0861 100Kohm
R0863 0ohm
R0866 100Kohm
C0807 100pF
C0809 100pF
L0810
L0812
ZD0835 RLZ8.2
ZD0836 RLZ8.2
ZD0837 RLZ8.2
ZD0838 RLZ8.2
ZD0844 RLZ8.2
ZD0847 RLZ8.2
VIDEO1
VIDEO1_DET
VIDEO1_SL
VIDEO1_SR
VIDEO2_INPUT
SIDE AV JACK
TP8_1
TP8_2
TP8_3
TP8_4
TP8_5
TP8_6
TP8_7
TP8_8
L0811
sicon12p
ZD0834 RLZ8.2
R0851 10ohm
R0852 75ohm
VIDEO2
VIDEO2_DET
S-VIDEO2_DET
L0808
L0809
R0854 10ohm
R0855 10ohm
R0857 100Kohm
R0858 100Kohm
C0805 330pF 50V
C0806 330pF 50V
VIDEO2_SL
VIDEO2_SR
R0860 10ohm
R0862 75ohm
ZD0839 RLZ8.2
S-VIDEO2_Y
R0864 10ohm
R0865 75ohm
ZD0848 RLZ8.2
S-VIDEO2_C
ZD0840 RLZ8.2
ZD0841 RLZ8.2
ZD0842 RLZ8.2
ZD0843 RLZ8.2
ZD0845 RLZ8.2
ZD0846 RLZ8.2
XREF

10-1-9 CONTROL_POWER CONNECTOR

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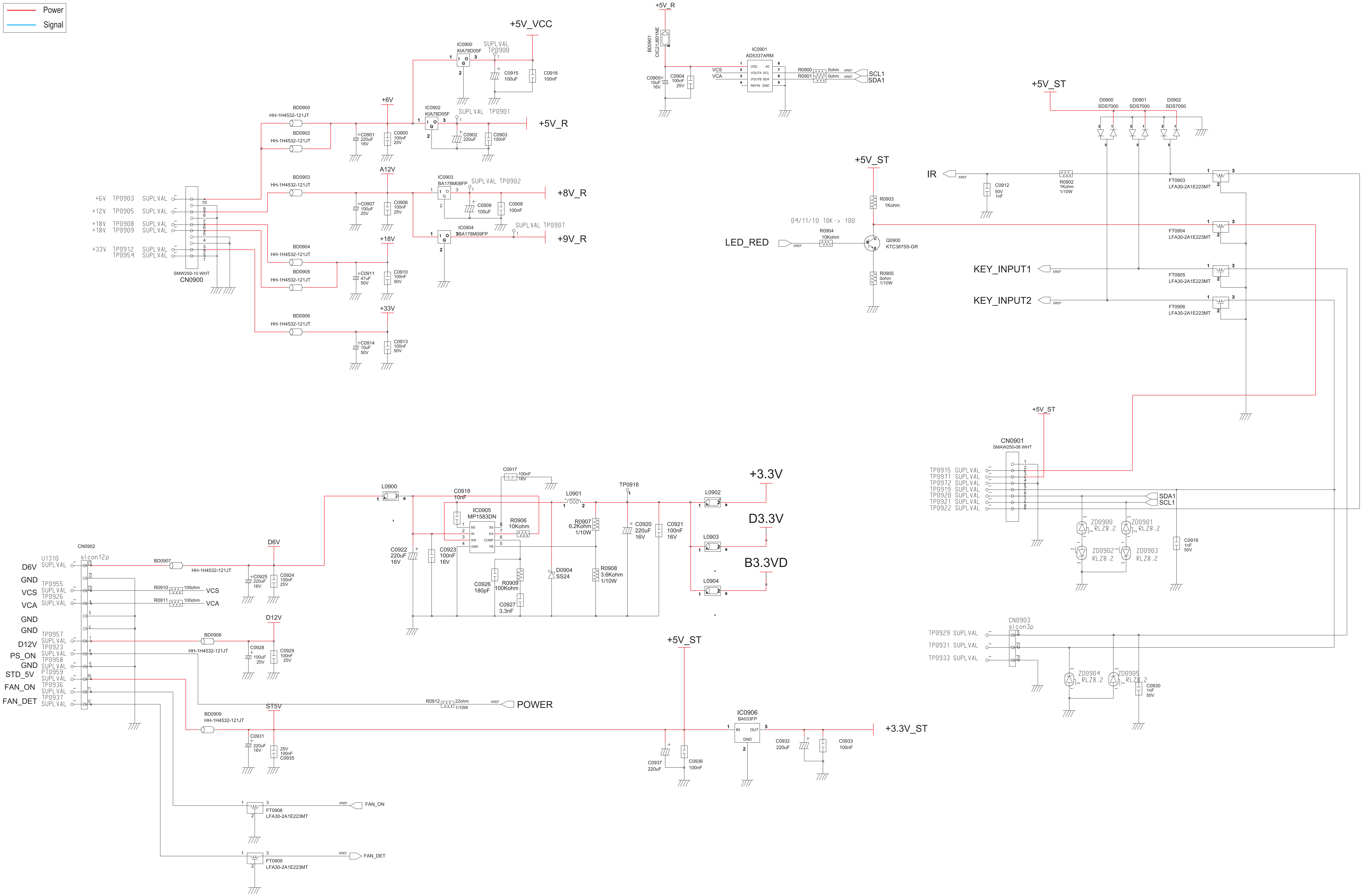
Power
Signal
+5V_VCC
+5V_R
+8V_R
+9V_R
+6V
A12V
+18V
+33V
IC0900 KIA78D05F
IC0902 KIA78D05F
IC0903 BA178M08FP
IC0904 BA178M09FP
SUPLVAL TP0900
SUPLVAL TP0901
SUPLVAL TP0902
SUPLVAL TP0907
BD0900 HH-1H4532-121JT
BD0902 HH-1H4532-121JT
BD0903 HH-1H4532-121JT
BD0904 HH-1H4532-121JT
BD0905 HH-1H4532-121JT
BD0906 HH-1H4532-121JT
+6V TP0903 SUPLVAL
+12V TP0905 SUPLVAL
+18V TP0908 SUPLVAL
+18V TP0909 SUPLVAL
+33V TP0912 SUPLVAL
TP0954 SUPLVAL
SMW250-10 WHT
CN0900
+5V_R
BD0901 CIC21J601NE
IC0901 AD5337ARM
VCS
VCA
R0900 0ohm
R0901 0ohm
SCL1
SDA1
+5V_ST
D0900 SDS7000
D0901 SDS7000
D0902 SDS7000
IR
C0912 50V 1nF
R0902 1Kohm 1/10W
FT0903 LFA30-2A1E223MT
FT0904 LFA30-2A1E223MT
FT0905 LFA30-2A1E223MT
FT0906 LFA30-2A1E223MT
R0903 1Kohm
04/11/10 10K-> 100
R0904 10Kohm
LED_RED
Q0900 KTC3875S-GR
R0905 0ohm 1/10W
KEY_INPUT1
KEY_INPUT2
CN0901 SMAW250-08 WHT
TP0915 SUPLVAL
TP0971 SUPLVAL
TP0972 SUPLVAL
TP0919 SUPLVAL
TP0920 SUPLVAL
TP0921 SUPLVAL
TP0922 SUPLVAL
ZD0900 RLZ8.2
ZD0901 RLZ8.2
ZD0902 RLZ8.2
ZD0903 RLZ8.2
C0919 1nF 50V
+3.3V
D3.3V
B3.3VD
L0900
L0901
L0902
L0903
L0904
TP0918
C0917 100nF 16V
C0918 10nF
IC0905 MP1583DN
R0906 10Kohm
R0907 6.2Kohm 1/10W
R0908 3.6Kohm 1/10W
R0909 100Kohm
C0920 220uF 16V
C0921 100nF 16V
C0922 220uF 16V
C0923 100nF 16V
C0926 180pF
C0927 3.3nF
D0904 SS24
CN0902 slcon12p
D6V
GND
VCS
VCA
GND
GND
D12V
PS_ON
GND
STD_5V
FAN_ON
FAN_DET
U1310 SUPLVAL
TP0955 SUPLVAL
TP0926 SUPLVAL
TP0957 SUPLVAL
TP0923 SUPLVAL
TP0958 SUPLVAL
TP0959 SUPLVAL
TP0936 SUPLVAL
TP0937 SUPLVAL
BD0907 HH-1H4532-121JT
R0910 100ohm
R0911 100ohm
C0925 220uF 16V
C0924 100nF 25V
BD0908 HH-1H4532-121JT
C0928 100uF 25V
C0929 100nF 25V
R0912 22ohm 1/10W
POWER
ST5V
BD0909 HH-1H4532-121JT
C0931 220uF 16V
C0935 25V 100nF
+5V_ST
IC0906 BA033FP
+3.3V_ST
C0937 220uF
C0936 100nF
C0932 220uF
C0933 100nF
CN0903 slcon3p
TP0929 SUPLVAL
TP0931 SUPLVAL
TP0933 SUPLVAL
ZD0904 RLZ8.2
ZD0905 RLZ8.2
C0930 1nF 50V
FT0908 LFA30-2A1E223MT
FAN_ON
FT0909 LFA30-2A1E223MT
FAN_DET

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10-1-10 AUDIO PART

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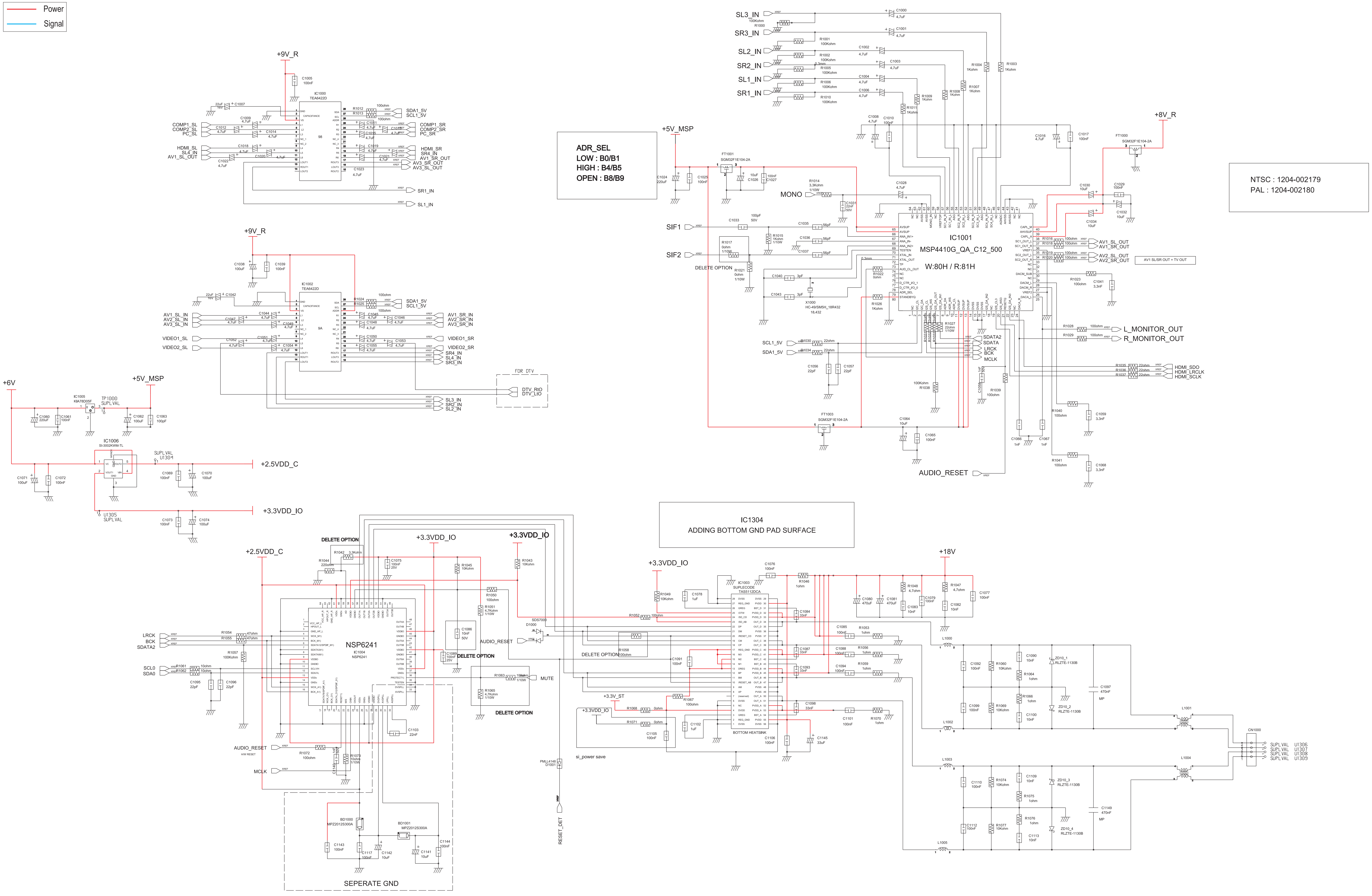
Power
Signal
+9V_R
IC1000
TEA6422D
COMP1_SL
COMP2_SL
PC_SL
HDMI_SL
SL4_IN
AV1_SL_OUT
SDA1_5V
SCL1_5V
COMP1_SR
COMP2_SR
PC_SR
HDMI_SR
SR4_IN
AV1_SR_OUT
AV3_SR_OUT
AV3_SL_OUT
SR1_IN
SL1_IN
IC1002
TEA6422D
AV1_SL_IN
AV2_SL_IN
AV3_SL_IN
VIDEO1_SL
VIDEO2_SL
AV1_SR_IN
AV2_SR_IN
AV3_SR_IN
VIDEO1_SR
VIDEO2_SR
SR4_IN
SL4_IN
SR3_IN
FOR DTV
DTV_RtO
DTV_LtO
SL3_IN
SR2_IN
SL2_IN
+6V
+5V_MSP
IC1005
KIA78D05F
IC1006
SI-3002KWM-TL
+2.5VDD_C
+3.3VDD_IO
ADR_SEL
LOW : B0/B1
HIGH : B4/B5
OPEN : B8/B9
SL3_IN
SR3_IN
SL2_IN
SR2_IN
SL1_IN
SR1_IN
MONO
SIF1
SIF2
DELETE OPTION
IC1001
MSP4410G_QA_C12_500
W:80H / R:81H
+8V_R
AV1_SL_OUT
AV1_SR_OUT
AV2_SL_OUT
AV2_SR_OUT
AV1 SL/SR OUT = TV OUT
L_MONITOR_OUT
R_MONITOR_OUT
SCL1_5V
SDA1_5V
SDATA2
SDATA
LRCK
BCK
MCLK
HDMI_SDO
HDMI_LRCLK
HDMI_SCLK
AUDIO_RESET
NTSC : 1204-002179
PAL : 1204-002180
IC1304
ADDING BOTTOM GND PAD SURFACE
DELETE OPTION
+2.5VDD_C
+3.3VDD_IO
+3.3VDD_IO
NSP6241
IC1004
LRCK
BCK
SDATA2
SCL0
SDA0
AUDIO_RESET
MUTE
DELETE OPTION
AUDIO_RESET
MCLK
BD1000
MPZ2012S300A
BD1001
MPZ2012S300A
SEPERATE GND
+3.3VDD_IO
IC1003
TAS5112DCA
BOTTOM HEATSINK
+3.3V_ST
si_power save
RESET_DET
+18V
L1000
L1001
L1002
L1003
L1004
L1005
CN1000

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10-1-11 LVDS

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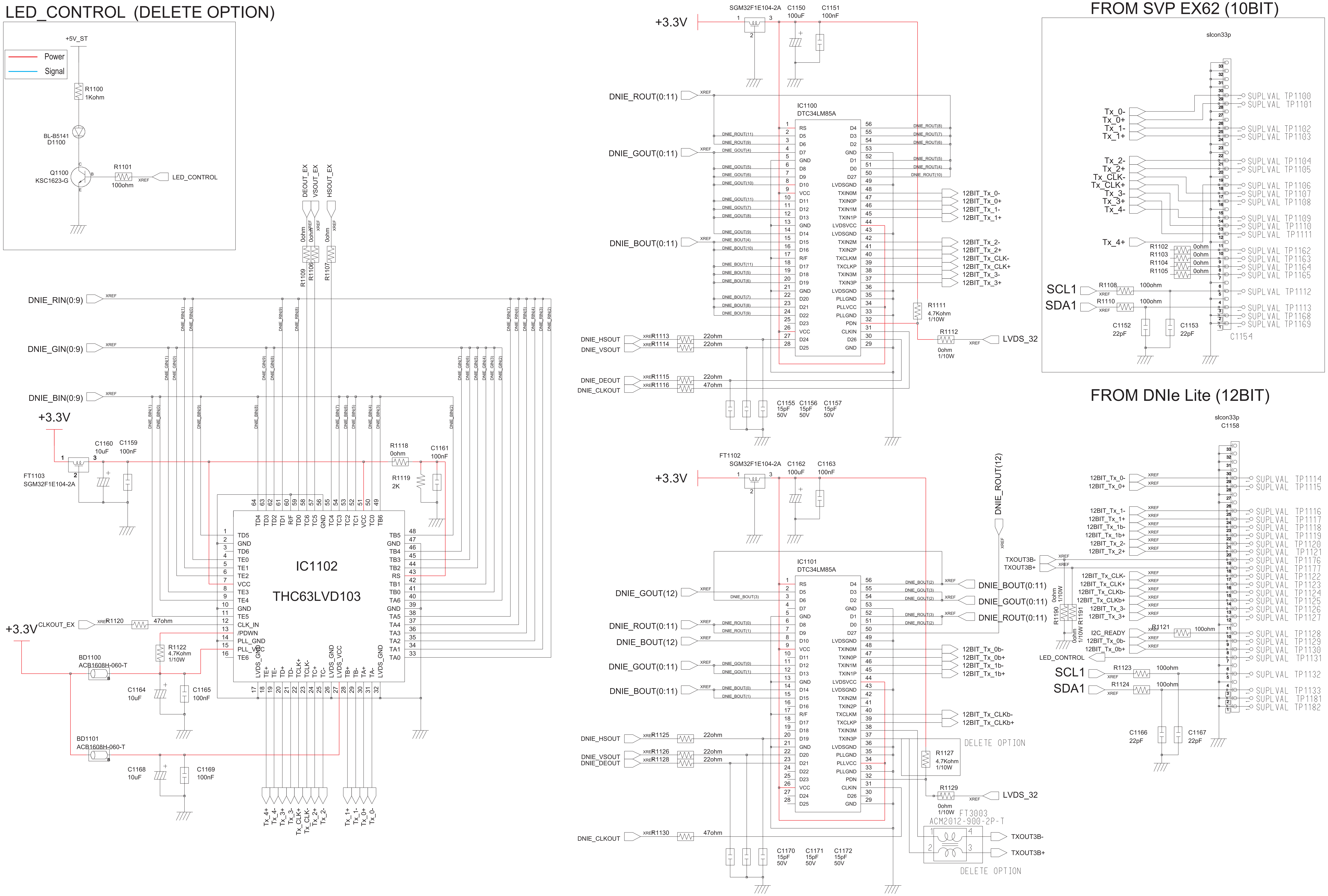
LED_CONTROL (DELETE OPTION)
Power
Signal
+5V_ST
R1100 1Kohm
BL-B5141 D1100
Q1100 KSC1623-G
R1101 100ohm
LED_CONTROL
DEOUT_EX
VSOUT_EX
HSOUT_EX
R1109 R1106 R1107 0ohm
DNIE_RIN(0:9)
DNIE_GIN(0:9)
DNIE_BIN(0:9)
+3.3V
FT1103 SGM32F1E104-2A
C1160 10uF
C1159 100nF
R1118 0ohm
C1161 100nF
R1119 2K
IC1102
THC63LVD103
CLKOUT_EX
R1120 47ohm
R1122 4.7Kohm 1/10W
BD1100 ACB1608H-060-T
C1164 10uF
C1165 100nF
BD1101 ACB1608H-060-T
C1168 10uF
C1169 100nF
Tx_4+ Tx_4- Tx_3+ Tx_3- Tx_CLK+ Tx_CLK- Tx_2+ Tx_2-
Tx_1+ Tx_1- Tx_0+ Tx_0-
SGM32F1E104-2A
C1150 100uF
C1151 100nF
DNIE_ROUT(0:11)
DNIE_GOUT(0:11)
DNIE_BOUT(0:11)
IC1100 DTC34LM85A
12BIT_Tx_0-
12BIT_Tx_0+
12BIT_Tx_1-
12BIT_Tx_1+
12BIT_Tx_2-
12BIT_Tx_2+
12BIT_Tx_CLK-
12BIT_Tx_CLK+
12BIT_Tx_3-
12BIT_Tx_3+
R1111 4.7Kohm 1/10W
R1112 0ohm 1/10W
LVDS_32
DNIE_HSOUT
DNIE_VSOUT
R1113 22ohm
R1114 22ohm
DNIE_DEOUT
DNIE_CLKOUT
R1115 22ohm
R1116 47ohm
C1155 15pF 50V
C1156 15pF 50V
C1157 15pF 50V
FROM SVP EX62 (10BIT)
slcon33p
Tx_0- Tx_0+ Tx_1- Tx_1+ Tx_2- Tx_2+ Tx_CLK- Tx_CLK+ Tx_3- Tx_3+ Tx_4- Tx_4+
R1102 R1103 R1104 R1105 0ohm
SCL1
SDA1
R1108 100ohm
R1110 100ohm
C1152 22pF
C1153 22pF
C1154
SUPLVAL TP1100 – TP1112, TP1113, TP1162 – TP1165, TP1168, TP1169
FROM DNIe Lite (12BIT)
slcon33p C1158
FT1102 SGM32F1E104-2A
C1162 100uF
C1163 100nF
DNIE_ROUT(12)
IC1101 DTC34LM85A
DNIE_GOUT(12)
DNIE_ROUT(0:11)
DNIE_BOUT(12)
DNIE_GOUT(0:11)
DNIE_BOUT(0:11)
12BIT_Tx_0b-
12BIT_Tx_0b+
12BIT_Tx_1b-
12BIT_Tx_1b+
12BIT_Tx_CLKb-
12BIT_Tx_CLKb+
R1125 22ohm
R1126 22ohm
R1128 22ohm
R1127 4.7Kohm 1/10W
DELETE OPTION
R1129 0ohm 1/10W
LVDS_32
FT3003 ACM2012-900-2P-T
TXOUT3B-
TXOUT3B+
DELETE OPTION
R1130 47ohm
C1170 15pF 50V
C1171 15pF 50V
C1172 15pF 50V
TXOUT3B-
TXOUT3B+
R1190 R1191 0ohm 1/10W
I2C_READY
R1121 100ohm
LED_CONTROL
R1123 100ohm
R1124 100ohm
C1166 22pF
C1167 22pF
SUPLVAL TP1114 – TP1133, TP1176, TP1177, TP1181, TP1182

10-1-12 SOUND DELAY

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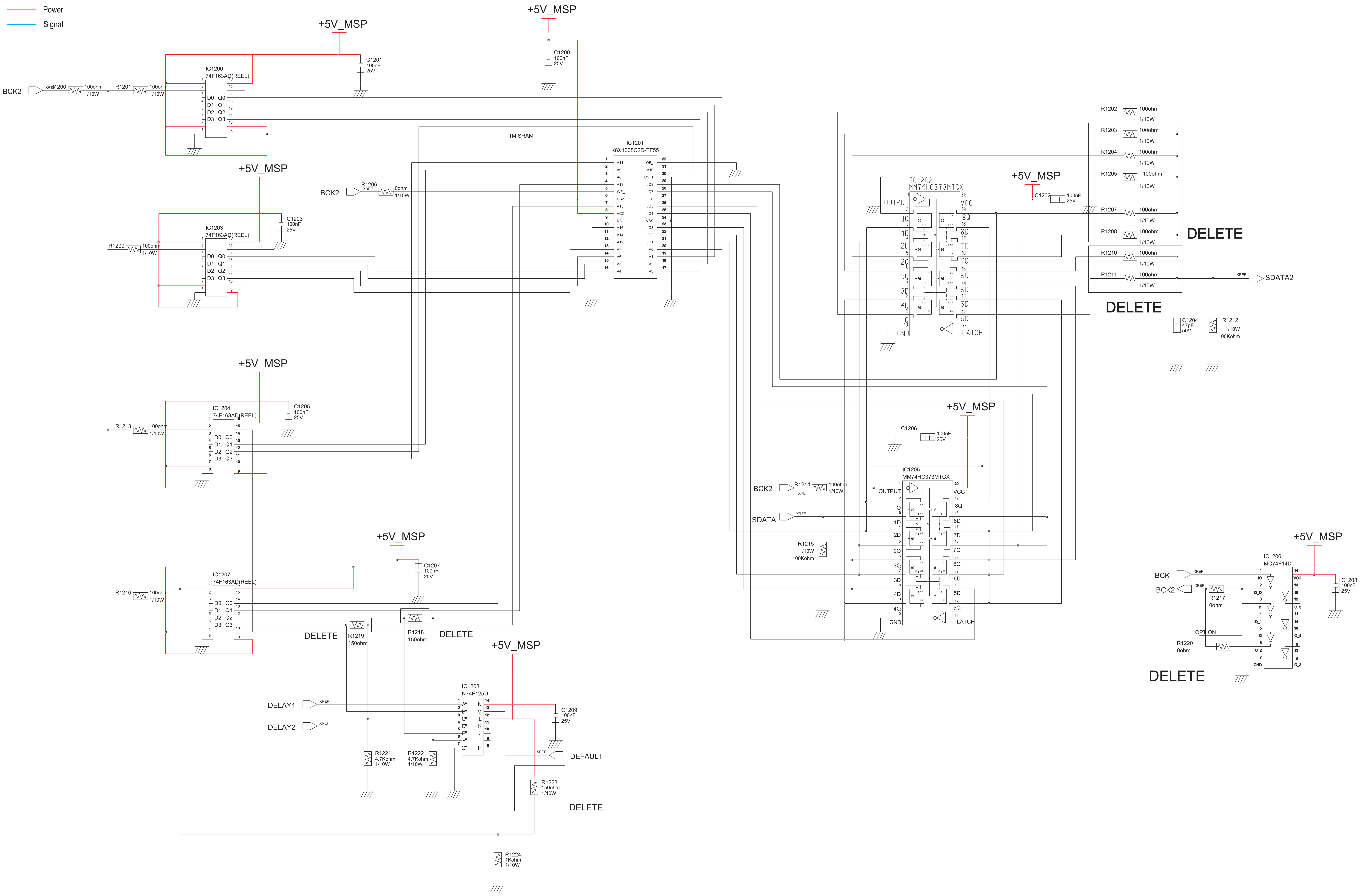
Power
Signal
+5V_MSP
BCK2
R1200
100ohm
1/10W
R1201
100ohm
1/10W
IC1200
74F163AD(REEL)
D0 Q0
D1 Q1
D2 Q2
D3 Q3
C1201
100nF
25V
C1200
100nF
25V
1M SRAM
IC1201
K6X1008C2D-TF55
A11
A9
A8
A13
WE_
CS2
A15
VCC
NC
A16
A14
A12
A7
A6
A5
A4
OE_
A10
CS_1
I/O8
I/O7
I/O6
I/O5
I/O4
VSS
I/O3
I/O2
I/O1
A0
A1
A2
A3
R1206
0ohm
1/10W
IC1203
74F163AD(REEL)
C1203
100nF
25V
R1209
100ohm
1/10W
IC1204
74F163AD(REEL)
C1205
100nF
25V
R1213
100ohm
1/10W
IC1207
74F163AD(REEL)
C1207
100nF
25V
R1216
100ohm
1/10W
DELETE
R1219
150ohm
R1218
150ohm
DELETE
IC1208
N74F125D
C1209
100nF
25V
DELAY1
DELAY2
XREF
DEFAULT
R1221
4.7Kohm
1/10W
R1222
4.7Kohm
1/10W
R1223
150ohm
1/10W
DELETE
R1224
1Kohm
1/10W
IC1202
MM74HC373MTCX
OUTPUT
VCC
LATCH
GND
C1202
100nF
25V
R1202
100ohm
1/10W
R1203
100ohm
1/10W
R1204
100ohm
1/10W
R1205
100ohm
1/10W
R1207
100ohm
1/10W
R1208
100ohm
1/10W
DELETE
R1210
100ohm
1/10W
R1211
100ohm
1/10W
SDATA2
DELETE
C1204
47pF
50V
R1212
1/10W
100Kohm
C1206
100nF
25V
IC1205
MM74HC373MTCX
R1214
100ohm
1/10W
SDATA
R1215
1/10W
100Kohm
BCK
IC1206
MC74F14D
R1217
0ohm
OPTION
R1220
0ohm
C1208
100nF
25V
DELETE

10-1-13 TUNER_DTV_POWER

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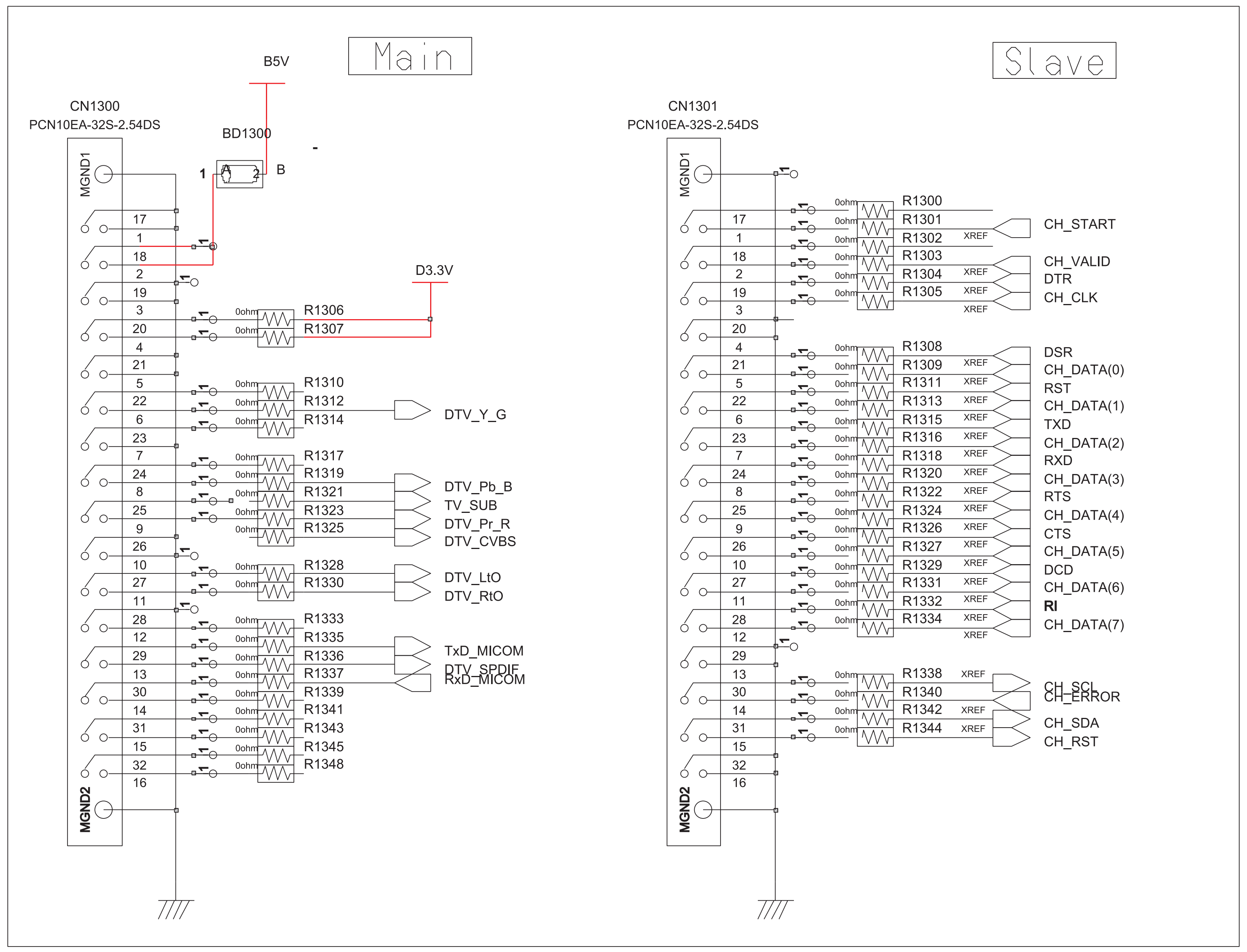
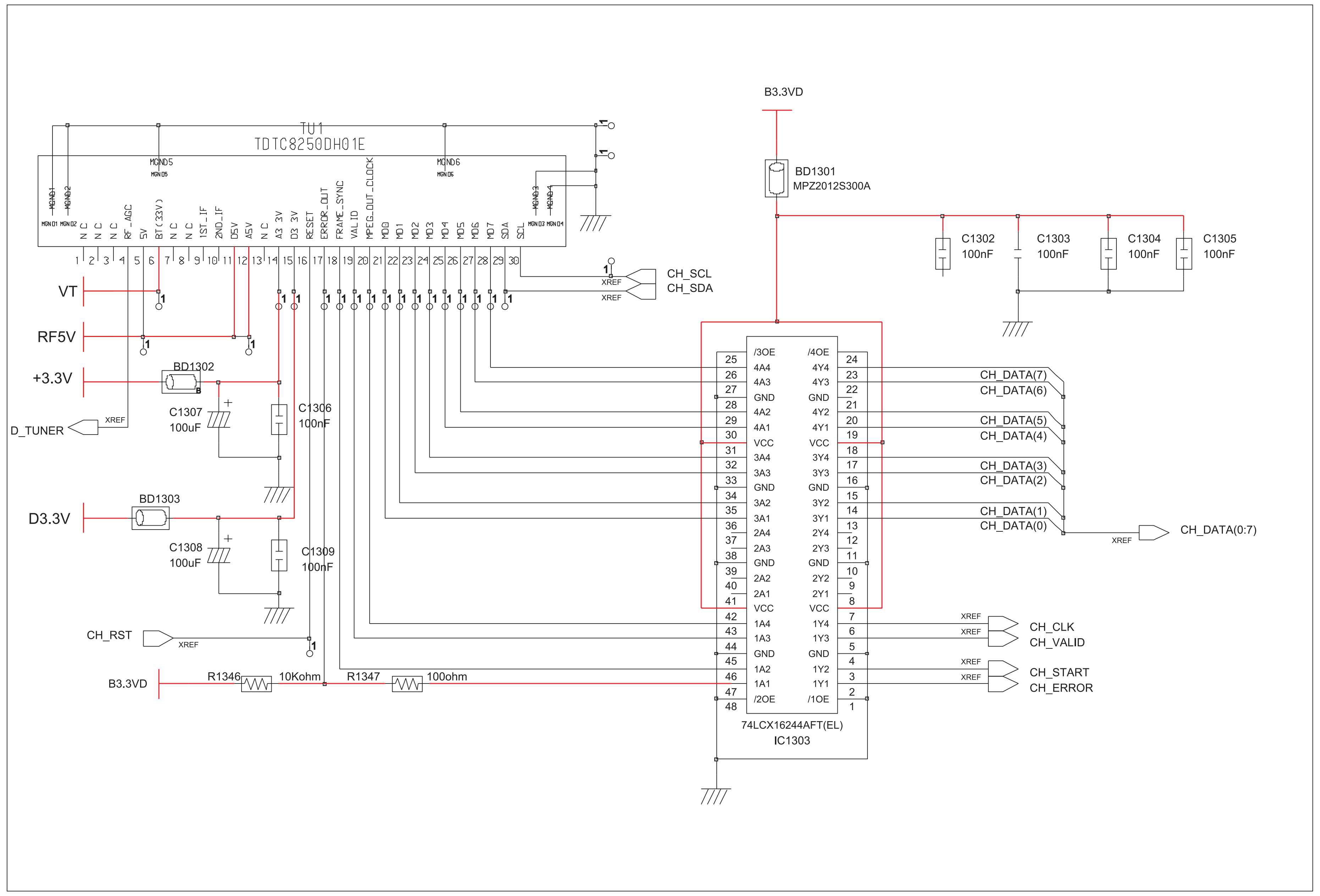
Power
Signal

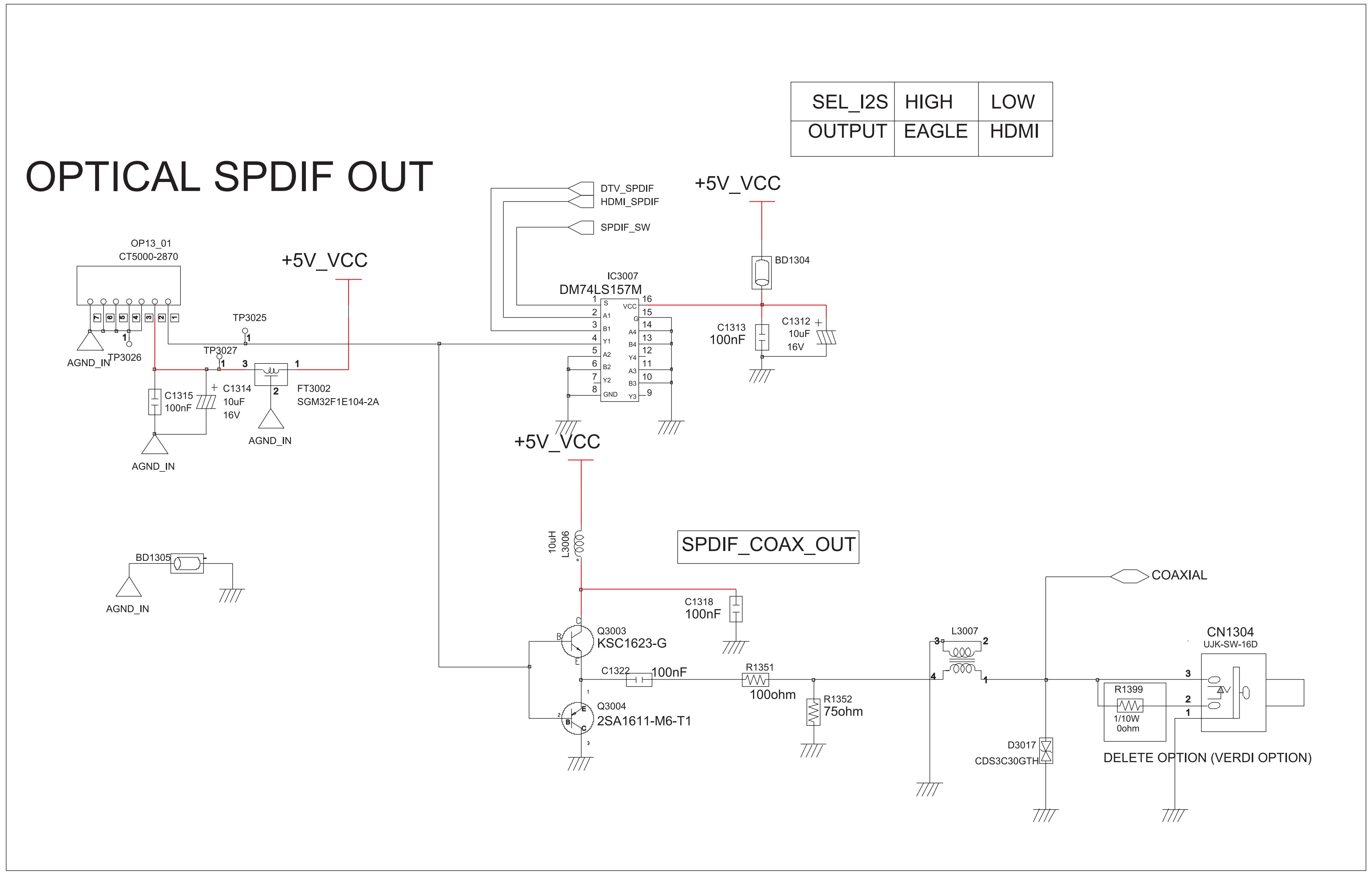
DTV MODULE CONNECTION


Main
Slave
B5V
CN1300
PCN10EA-32S-2.54DS
BD1300
D3.3V
MGND1
MGND2
R1306
R1307
R1310
R1312
R1314
DTV_Y_G
R1317
R1319
R1321
R1323
R1325
DTV_Pb_B
TV_SUB
DTV_Pr_R
DTV_CVBS
R1328
R1330
DTV_LtO
DTV_RtO
R1333
R1335
R1336
R1337
R1339
R1341
R1343
R1345
R1348
TxD_MICOM
DTV_SPDIF
RxD_MICOM
CN1301
PCN10EA-32S-2.54DS
R1300
R1301
R1302
R1303
R1304
R1305
CH_START
CH_VALID
DTR
CH_CLK
R1308
R1309
R1311
R1313
R1315
R1316
R1318
R1320
R1322
R1324
R1326
R1327
R1329
R1331
R1332
R1334
DSR
CH_DATA(0)
RST
CH_DATA(1)
TXD
CH_DATA(2)
RXD
CH_DATA(3)
RTS
CH_DATA(4)
CTS
CH_DATA(5)
DCD
CH_DATA(6)
RI
CH_DATA(7)
R1338
R1340
R1342
R1344
CH_SCL
CH_ERROR
CH_SDA
CH_RST

DIGITAL TUNER


TU1
TDTC8250DH01E
B3.3VD
BD1301
MPZ2012S300A
C1302
100nF
C1303
100nF
C1304
100nF
C1305
100nF
VT
RF5V
+3.3V
D_TUNER
D3.3V
BD1302
C1307
100uF
C1306
100nF
BD1303
C1308
100uF
C1309
100nF
CH_SCL
CH_SDA
CH_RST
B3.3VD
R1346
10Kohm
R1347
100ohm
CH_DATA(7)
CH_DATA(6)
CH_DATA(5)
CH_DATA(4)
CH_DATA(3)
CH_DATA(2)
CH_DATA(1)
CH_DATA(0)
CH_DATA(0:7)
CH_CLK
CH_VALID
CH_START
CH_ERROR
74LCX16244AFT(EL)
IC1303

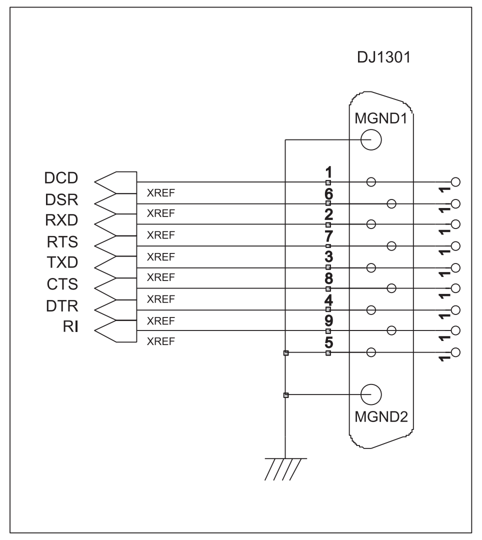
OPTICAL SPDIF OUT



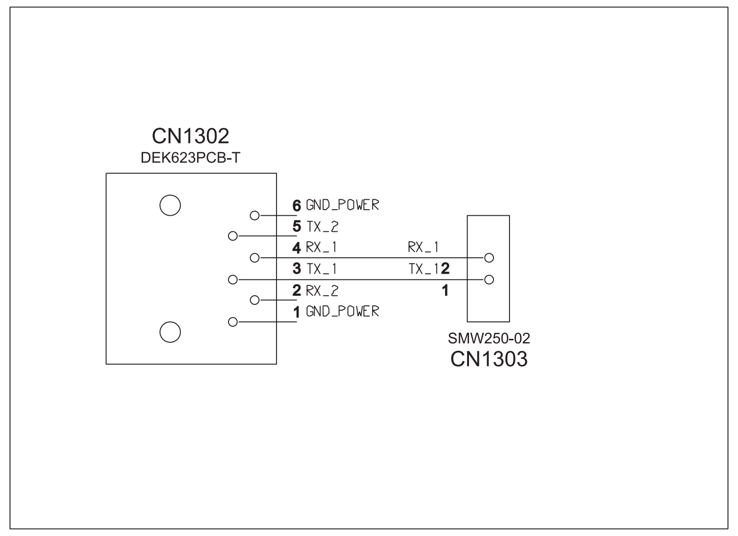
SEL_I2S	HIGH	LOW
OUTPUT	EAGLE	HDMI

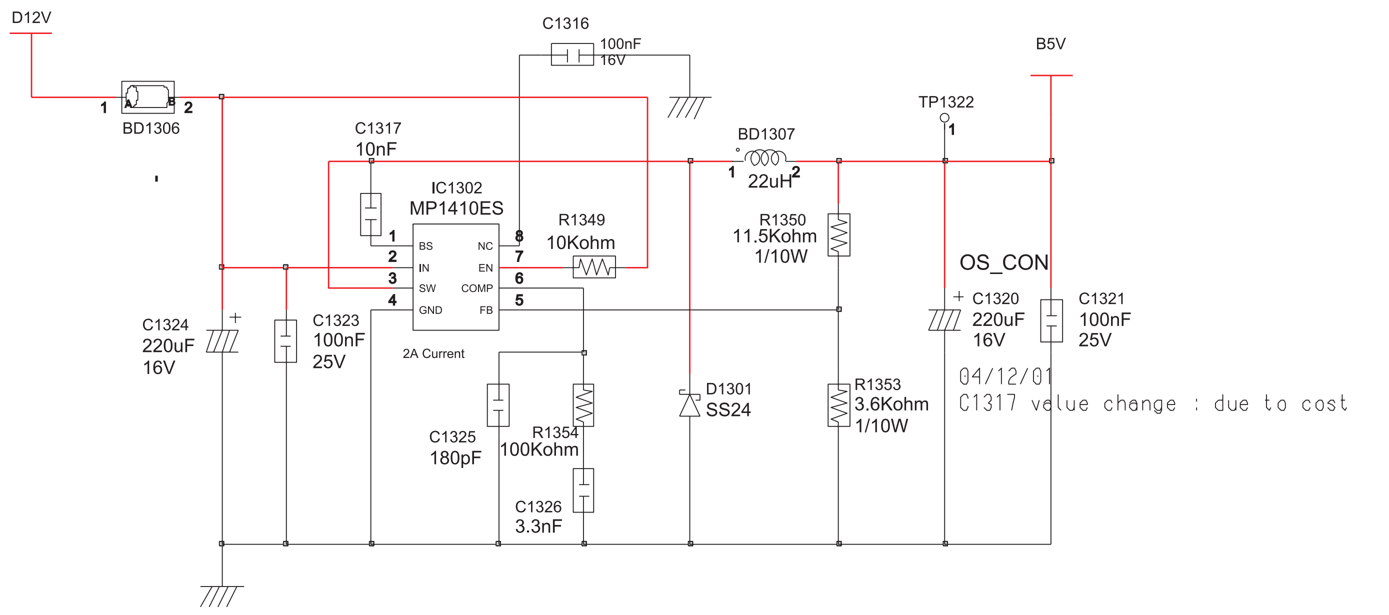
OP13_01
CT5000-2870
+5V_VCC
TP3025
TP3026
TP3027
AGND_IN
C1315
100nF
C1314
10uF
16V
FT3002
SGM32F1E104-2A
DTV_SPDIF
HDMI_SPDIF
SPDIF_SW
IC3007
DM74LS157M
BD1304
C1313
100nF
C1312
10uF
16V
+5V_VCC
L3006
10uH
SPDIF_COAX_OUT
C1318
100nF
Q3003
KSC1623-G
C1322
100nF
Q3004
2SA1611-M6-T1
R1351
100ohm
R1352
75ohm
L3007
COAXIAL
CN1304
UJK-SW-16D
R1399
1/10W
0ohm
D3017
CDS3C30GTH
DELETE OPTION (VERDI OPTION)
BD1305
AGND_IN

RS_232 JACK


DJ1301
MGND1
MGND2
DCD
DSR
RXD
RTS
TXD
CTS
DTR
RI
TP3000
TP3001
TP3002
TP3003
TP3004
TP3005
TP3006
TP3007
TP3008

LAN JACK


CN1302
DEK623PCB-T
GND_POWER
TX_2
RX_1
TX_1
RX_2
GND_POWER
RX_1
TX_1
SMW250-02
CN1303


D12V
BD1306
C1316
100nF
16V
C1317
10nF
IC1302
MP1410ES
BS
IN
SW
GND
NC
EN
COMP
FB
2A Current
R1349
10Kohm
BD1307
22uH
R1350
11.5Kohm
1/10W
TP1322
B5V
OS_CON
C1320
220uF
16V
C1321
100nF
25V
C1324
220uF
16V
C1323
100nF
25V
C1325
180pF
R1354
100Kohm
C1326
3.3nF
D1301
SS24
R1353
3.6Kohm
1/10W
04/12/01
C1317 value change : due to cost

10-2 Function

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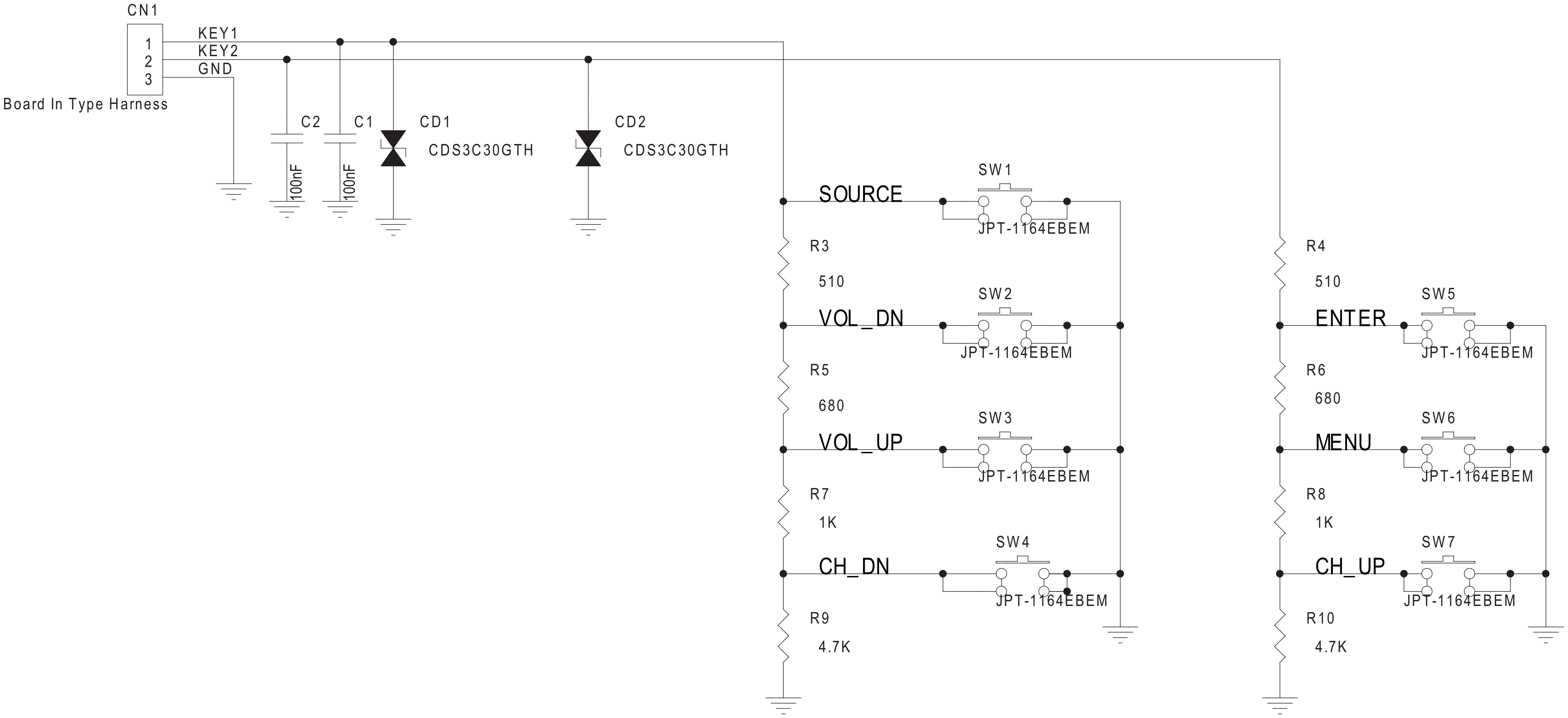
CN1
1
2
3
KEY1
KEY2
GND
Board In Type Harness
C2
C1
100nF
100nF
CD1
CDS3C30GTH
CD2
CDS3C30GTH
SOURCE
SW1
JPT-1164EBEM
R3
510
VOL_DN
SW2
JPT-1164EBEM
R5
680
VOL_UP
SW3
JPT-1164EBEM
R7
1K
CH_DN
SW4
JPT-1164EBEM
R9
4.7K
R4
510
ENTER
SW5
JPT-1164EBEM
R6
680
MENU
SW6
JPT-1164EBEM
R8
1K
CH_UP
SW7
JPT-1164EBEM
R10
4.7K

10-3 Power / IR

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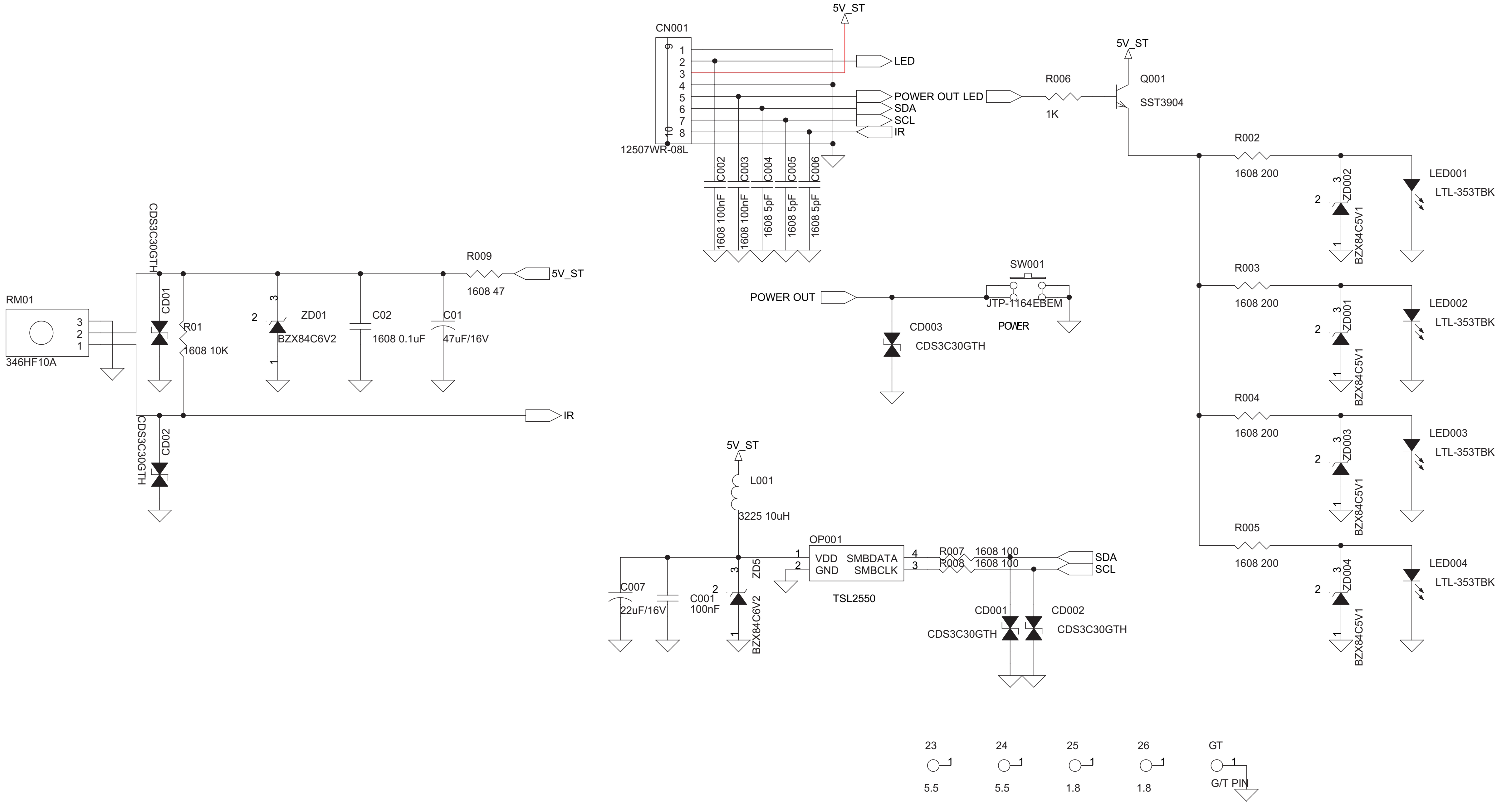
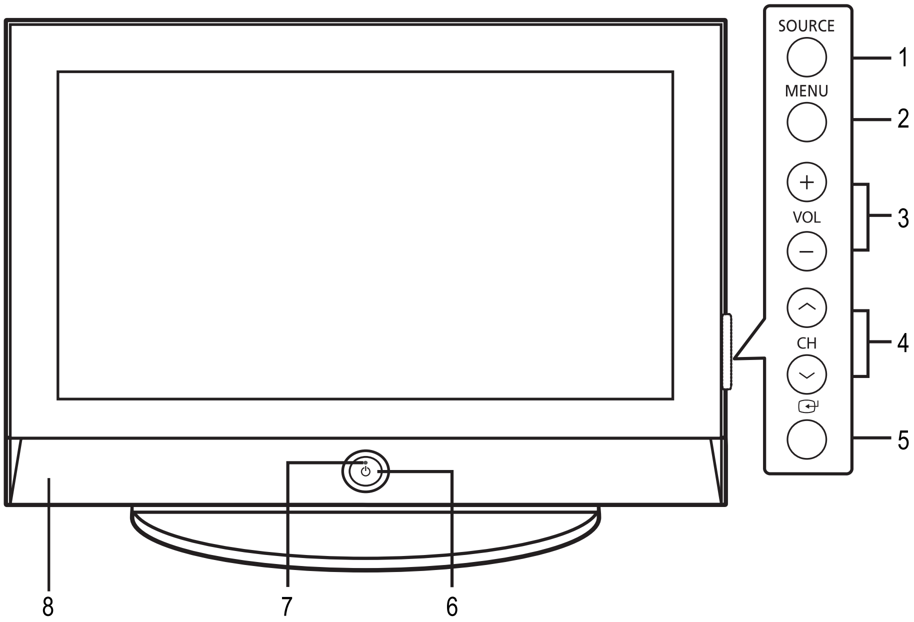

5V_ST
CN001
1
2
3
4
5
6
7
8
9
10
12507WR-08L
LED
POWER OUT LED
SDA
SCL
IR
C002
C003
C004
C005
C006
1608 100nF
1608 100nF
1608 5pF
1608 5pF
1608 5pF
5V_ST
R006
1K
Q001
SST3904
R002
1608 200
ZD002
BZX84C5V1
LED001
LTL-353TBK
R003
1608 200
ZD001
BZX84C5V1
LED002
LTL-353TBK
R004
1608 200
ZD003
BZX84C5V1
LED003
LTL-353TBK
R005
1608 200
ZD004
BZX84C5V1
LED004
LTL-353TBK
RM01
346HF10A
CDS3C30GTH
CD01
R01
1608 10K
ZD01
BZX84C6V2
C02
1608 0.1uF
C01
47uF/16V
R009
1608 47
5V_ST
IR
CD02
CDS3C30GTH
SW001
POWER OUT
JTP-1164EBEM
POWER
CD003
CDS3C30GTH
5V_ST
L001
3225 10uH
OP001
VDD
GND
SMBDATA
SMBCLK
TSL2550
R007
R008
1608 100
1608 100
SDA
SCL
C007
22uF/16V
C001
100nF
ZD5
BZX84C6V2
CD001
CDS3C30GTH
CD002
CDS3C30GTH
23
24
25
26
GT
5.5
5.5
1.8
1.8
G/T PIN

11. Operation Instruction & Installation

11-1 Product Features and Functions

11-1-1 Front Panel



1 **SOURCE button**
Press to display all of the available video sources (TV, AV, S-Video, Component1, Component2, PC, and HDMI).

2 **MENU button**
Displays the main on-screen menu.

3 **VOL +, - buttons**
Press to increase or decrease the volume. Also used to select or adjust items on the on-screen menu.

4 **CH(∧ ,∨) buttons**
Press CH ∧or CH ∨ to change channels. Also used to move up or down in the on-screen menu.

5 **↵ (Enter) button**
Press to confirm a selection.

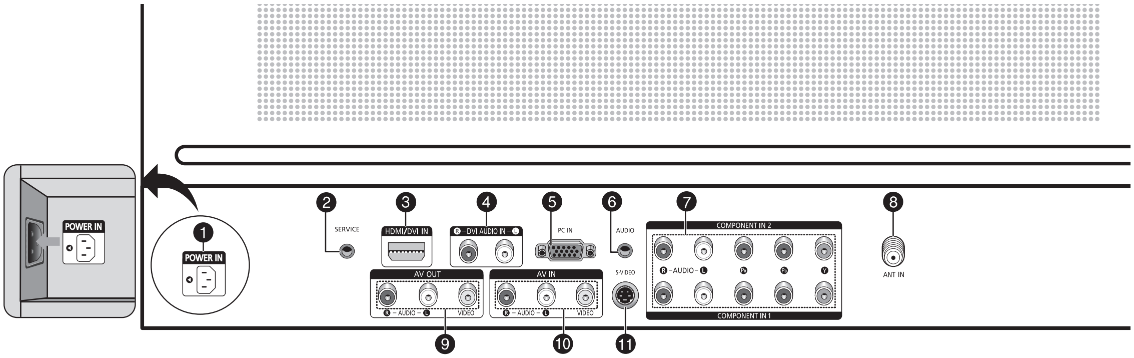
6 **Power button**
Press to turn the TV on and off.

Power indicator
- Power Off : Blue
- Power On : Off

7 **Remote Control Sensor**
Aim the remote control towards this spot on the TV.

8 **Speakers**

11-1-2 Rear Panel


POWER IN
POWER IN
1
2
SERVICE
3
HDMI/DVI IN
4
R – DVI AUDIO IN – L
5
PC IN
6
AUDIO
7
COMPONENT IN 2
R – AUDIO – L
PR
PB
Y
COMPONENT IN 1
8
ANT IN
AV OUT
R – AUDIO – L
VIDEO
AV IN
R – AUDIO – L
VIDEO
S-VIDEO
9
10
11

1 POWER IN
Connect the supplied power cord.

2 SERVICE ONLY
Connector for service only.

3 HDMI/DVI IN
Connect to the HDMI jack of a device with HDMI output.
These inputs can also be used as a DVI connection with separate analog audio inputs. An optional HDMI/DVI cable will be necessary to make this connection.
When using the optional HDMI/DVI adapter, the DVI analog audio inputs on your TV allow you to receive left and right audio from your DVI device. (Not compatible with PC)

4 DVI AUDIO IN (AUDIO-L/R)
Connect to the DVI audio output jack of an external device.

5 PC IN
Connect to the video output jack on your PC.

6 PC AUDIO IN
Connect to the audio output jack on your PC.

7 COMPONENT IN 1, 2
Video (Y/PB/PR) and audio (L-AUDIO-R) component inputs.

8 ANT IN
75 Ω Coaxial connector for Antenna/Cable Network.

9 AV OUT (VIDEO / AUDIO L/R)
Outputs for external devices.

10 AV IN (VIDEO / AUDIO L/R)
Video and audio inputs for external devices, such as a camcorder or VCR.

11 S-VIDEO
Video input for external devices with an S-Video output, such as a camcorder or VCR.

11-1-3 Remote Control

❶ POWER button
Turns the TV on and off.

❷ P.MODE button
Adjust the TV picture by selecting one of the preset factory settings
(or select your personal, customized picture settings).
(Refer to page 46)

❸ P.SIZE button
Select Picture size. (Refer to page 50)

❹ Number buttons

❺ +100 button
Press to select channels over 100. For example, to select channel 121, press “+100”, then press “2” and “1.”

❻ MUTE button
Press to mute the TV sound.

❼ VOL (Volume) buttons
Use it to adjust volume.

❽ SLEEP button
Press to select a preset time interval for automatic shutoff.

❾ MENU button
Displays the main on-screen menu.

❿ ENTER button
Confirms a selection.

⓫ PIP button
Activates picture in picture.

⓬ STILL button
Press to pause the current screen.

⓭ LCD DISPLAY
When you press a button, 📶 appears along with selected mode (TV, VCR, CATV, DVD or STB) and the remote's battery charge status.

⓮ MODE button
Selects a target device to be controlled by the Samsung remote control (i.e., VCR, Cable, DVD players or Samsung STB). If you change modes, the new mode is momentarily displayed on LCD.

⓯ PRE-CH button
Tunes to the previous channel.

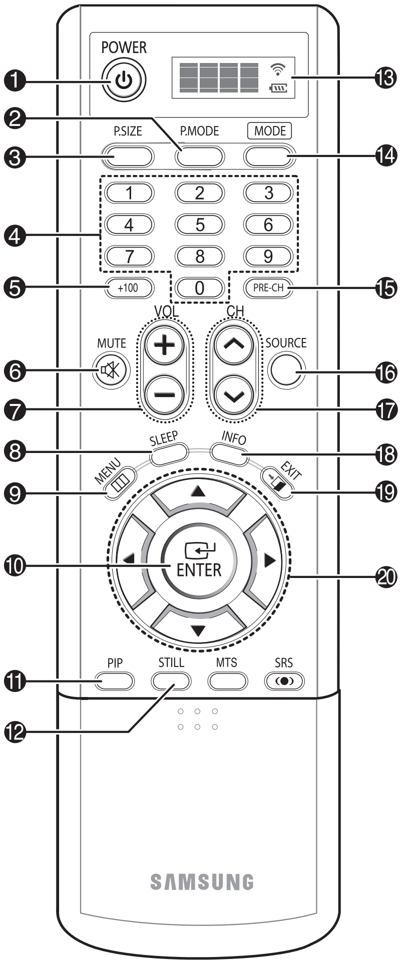
⓰ SOURCE button
Press to display all of the available video sources (TV, AV1, AV2, S-Video1, S-Video2, Component1, Component2, PC, and HDMI).

⓱ CH (Channel) buttons
Use it to switch channels.

⓲ INFO button
Press to display information on the TV screen.

⓳ EXIT button
Press to exit the menu.

⓴ Up/Down/Left/Right buttons
Control the cursor in the menu.



㉑ MTS button
Press to choose stereo, mono or Separate Audio Program (SAP broadcast).

㉒ SRS button
Selects Trusurround XT mode.

㉓ AUTO PROG. button
The TV automatically cycles through all of the available channels and stores them in memory.

㉔ ADD/DEL button
Press to add or delete channels in the TV's memory.

㉕ E.SAVING button
Press to adjust screen brightness according to surrounding environment. (Refer to page 95)

㉖ CAPTION button
Controls the caption decoder.

㉗ SET button
Used during set up of this Samsung remote control, so that it will work compatibly with other devices (VCR, Cable Box and DVD).

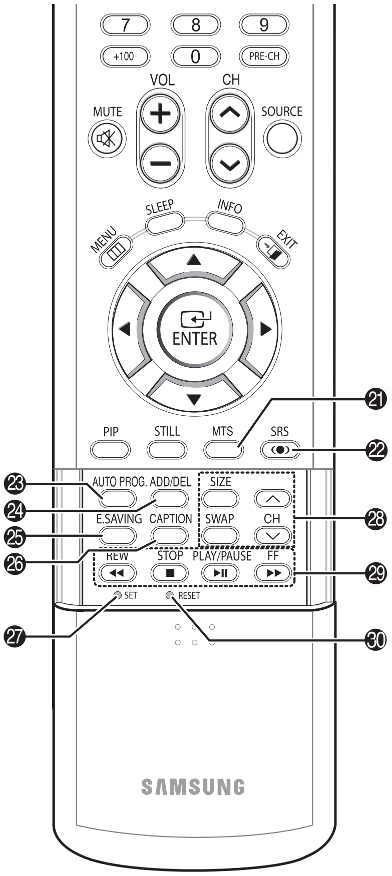
㉘ PIP control buttons
Size: Press to make the PIP window Large, Small or Double.

Swap: Exchanges the video signal that is currently displayed on the main screen with the signal in the PIP window.

CH ︿, ﹀: Displays the available channels in sequence. (These buttons change channels in the PIP window only.)

㉙ VCR, DVD control buttons
Controls VCR tape or DVD disc functions: Stop, Rewind, Play/Pause, and Fast Forward.

㉚ RESET button
If your remote control is not functioning properly, take out the batteries and press the reset button for about 2~3 seconds. Re-insert the batteries and try using the remote control again.


7
8
9
+100
0
PRE-CH
VOL
CH
MUTE
SOURCE
SLEEP
INFO
MENU
EXIT
ENTER
㉑
PIP
STILL
MTS
SRS
㉒
㉓
AUTO PROG.
ADD/DEL
SIZE
㉔
E.SAVING
CAPTION
SWAP
CH
㉘
㉕
㉖
REW
STOP
PLAY/PAUSE
FF
㉙
SET
RESET
㉗
㉚
SAMSUNG

11-2 New Features

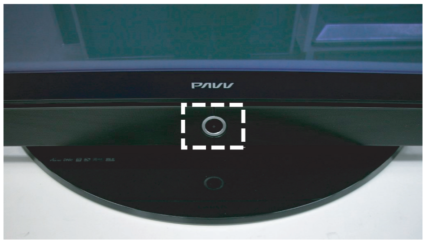
11-2-1 Power Saving Mode (Applies to the "Settings" of the User Menu)

1. Objectives
   - To enhance a sensible visual quality by maintaining an appropriate screen brightness according to the ambient brightness and to reduce power consumption.
   - To improve the power consumption efficiency when Power Saving Mode is selected.

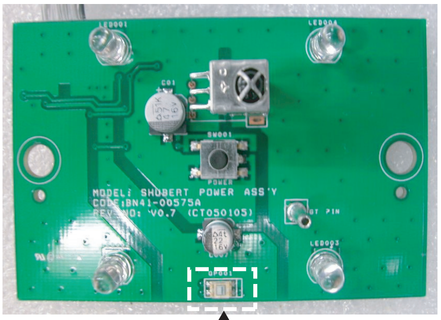
2. Details

The CPU PW318 of the Video Board takes the current ambient brightness (in Lux units) stored in the Ambient Light Sensor of the Power Assy., which is attached at the front of the PDP, at given intervals through SMBUS communication (identical to I2C) and controls the PDP module to operate with the appropriate illuminance. The I2C bus is used to communicate with the PDP module, and the communication method is the same as the existing communication method.

- Location of the Ambient Light Sensor



The sensor is attached to the Power Assy., which is on the front of the PDP. The location of the sensor on the Power Assy. is displayed in the figure below. External light reaches the sensor through the guide of the Power Assy.

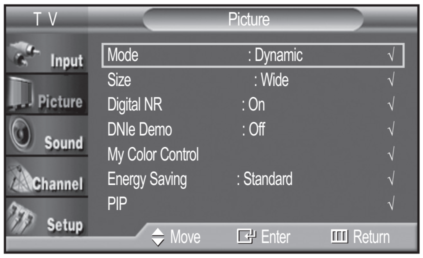


The Ambient Light Sensor IC
detects the amount of illumination.

The screen brightness is adjusted according to the brightness measured by the Ambient Light Sensor, using the Multi APC function (controls the number of sustain pulses according to the average signal levels) of the PDP panel, thus reducing power consumption.

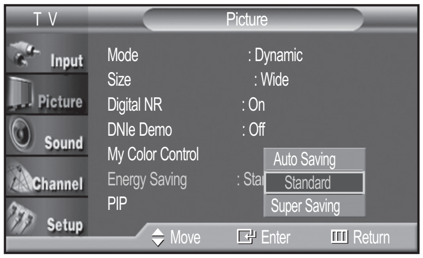
1 Press the MENU button. Press the ▲ or ▼ button to select "Picture", then press the ENTER button.

➤ Quick way to select Energy Saving: Simply press the "E.SAVING" button on the remote control.


T V
Picture
Input
Picture
Sound
Channel
Setup
Move
Enter
Return

Mode : Dynamic √
Size : Wide √
Digital NR : On √
DNIe Demo : Off √
My Color Control √
Energy Saving : Standard √
PIP √

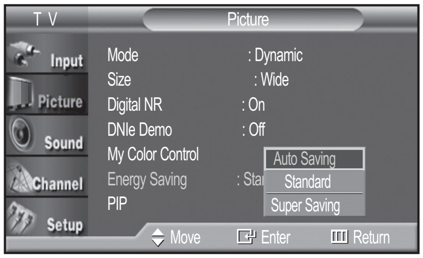
2 Press the ▲ or ▼ button to select "Energy Saving", then press the ENTER button.


T V
Picture
Input
Picture
Sound
Channel
Setup
Move
Enter
Return

Mode : Dynamic
Size : Wide
Digital NR : On
DNIe Demo : Off
My Color Control
Energy Saving : Sta
PIP
Auto Saving
Standard
Super Saving

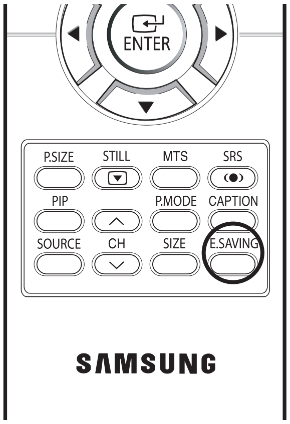
3 Press the ▲ or ▼ button to select submenu (Auto Saving, Standard, or Super Saving) you want, then press the ENTER button.

- Auto Saving : Automatically adjusts to the surrounding illumination.
- Standard : Operates in standard mode regardless of the surrounding illumination.
- Super Saving : Enters maximum power saving mode regardless of the surrounding illumination.


T V
Picture
Input
Picture
Sound
Channel
Setup
Move
Enter
Return

Mode : Dynamic
Size : Wide
Digital NR : On
DNIe Demo : Off
My Color Control
Energy Saving : Sta
PIP
Auto Saving
Standard
Super Saving

4 Press the EXIT button to exit.


ENTER
P.SIZE
STILL
MTS
SRS
PIP
P.MODE
CAPTION
SOURCE
CH
SIZE
E.SAVING
SAMSUNG

11-2-2 PIP Settings (X - PIP doesn't operate, O - PIP and swap operate)

Main screen / PIP screen	TV	AV	S-Video	Component 1	Component 2	PC	HDMI
TV	X	○	○	○	○	○	○
AV	○	X	○	○	○	○	○
S-Video	○	○	X	○	○	○	○
Component 1	X	X	X	X	X	X	X
Component 2	X	X	X	X	X	X	X
PC	X	X	X	X	X	X	X
HDMI	X	X	X	X	X	X	X

Note : This TV has only one tuner and does not allow you to watch one TV channel in the main screen and another channel in the PIP screen.

11-3 Installation Notes and Precautions

11-3-1 Installation Notes

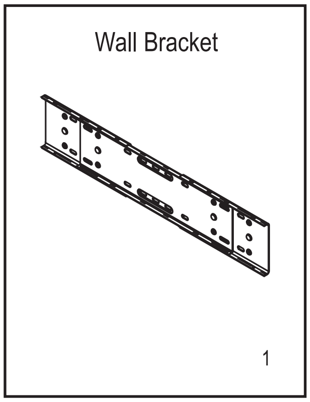
1. Contact a technician for installing the wall bracket.

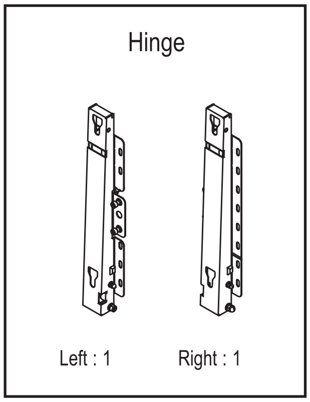
2. Samsung Electronics is not responsible for any damage to the product or injury to yourself or others if you elect to perform the wall installation.

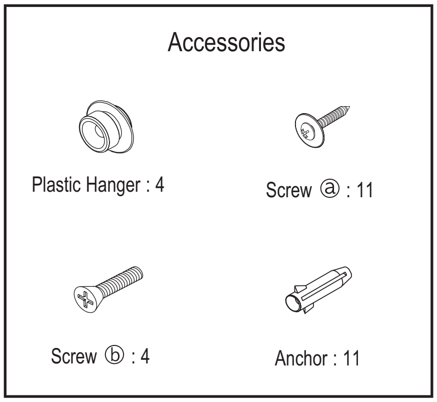
3. This product is for installing on cement walls. The product may not stay in place when installed on plaster or wood.

11-3-2 Parts (Wall attachment panel is sold separately)

Only use the components and accessories shipped with the panel.

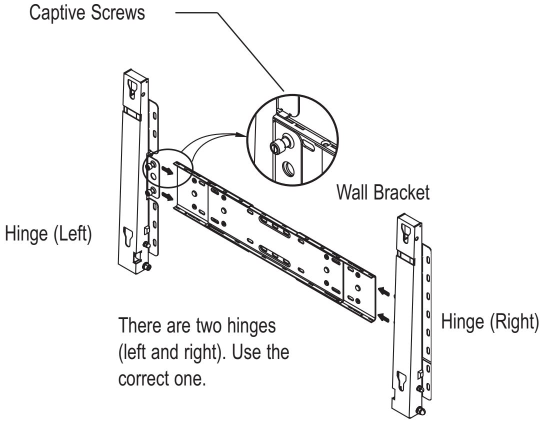

Wall Bracket
1


Hinge
Left : 1
Right : 1


Accessories
Plastic Hanger : 4
Screw ⓐ : 11
Screw ⓑ : 4
Anchor : 11

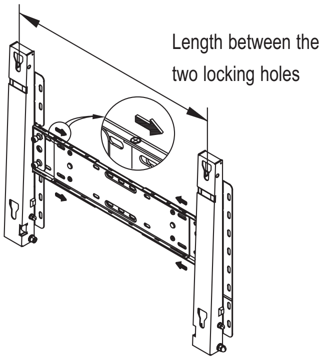
11-3-3 How to assemble the Wall Mount Bracket

1 Insert and tighten the Captive Screw in the direction of the arrow.
When done, mount the wall bracket on the wall.

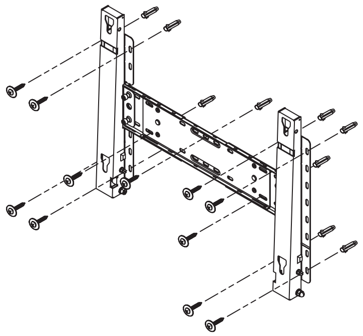

Captive Screws
Wall Bracket
Hinge (Left)
Hinge (Right)

There are two hinges (left and right). Use the correct one.

2 Before drilling into the wall, check if the length between the two locking holes at the back of the product is correct.
If the length is too short or long, loosen all or some of the 4 screws on the wall bracket to adjust the length.

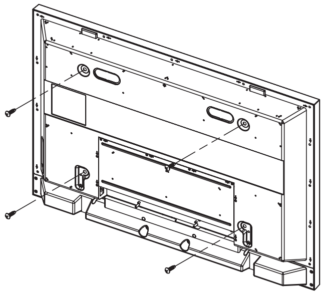

Length between the two locking holes

3 Check the installation diagram and mark the drill points on the wall.
Use the 5.0 mm bit to drill holes deeper than 35 mm. Fix each anchor in the corresponding hole.
Match each of the brackets and hinge holes to the corresponding anchor holes and insert and tighten the 11 screws ①.

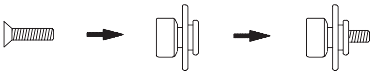


11-3-4 Fixing the TV panel to the wall attachment panel bracket

1 Remove the 4 screws on the back of the product.

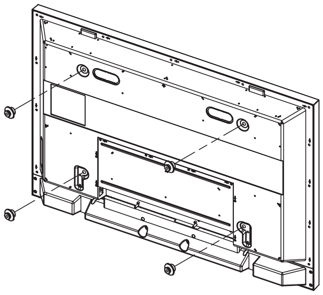


2 Insert the screw ⓑ into the plastic hanger. (See the figure below)

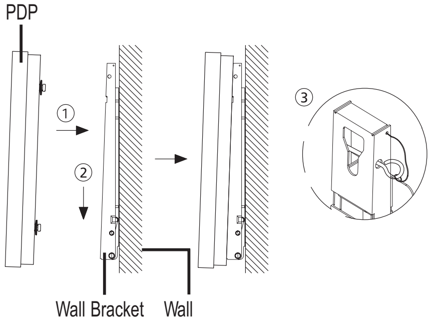


- Mount the product on the wall bracket and make sure it is properly fixed to the left and right plastic hangers.
- Be careful when installing the product on the bracket as fingers can be caught in the holes.
- Make sure the wall bracket is securely fixed to the wall, or the product may not stay in place after installation.

3 Tighten the 4 screws in step 2 (plastic hanger + screw ⓑ) to the rear holes of the product.



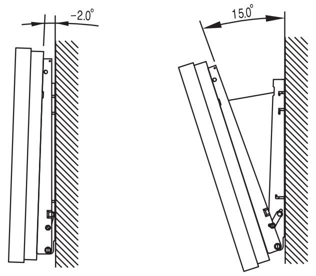
4 Remove safety pin (③) and insert the 4 product holders into the corresponding bracket holes (①). Then place the product (②) so that it is firmly fixed to the bracket. Make sure to reinsert and tighten the safety pin (③) to securely hold the product to the bracket.



11-3-5 How to Adjust Mounting Angle

Note : Adjust the bracket angle to -2° before installing it on the wall.

Change Angle

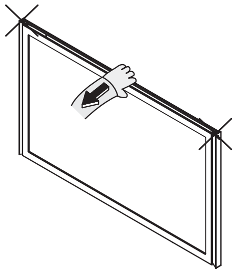


1 Fix the product to the wall bracket.

2 Hold the product at the top in the center and pull it forward (direction of the arrow) to adjust the angle. (See the figure to the right)

3 You can adjust the bracket angle between -2° and 15°.

How to Adjust Mounting Angle



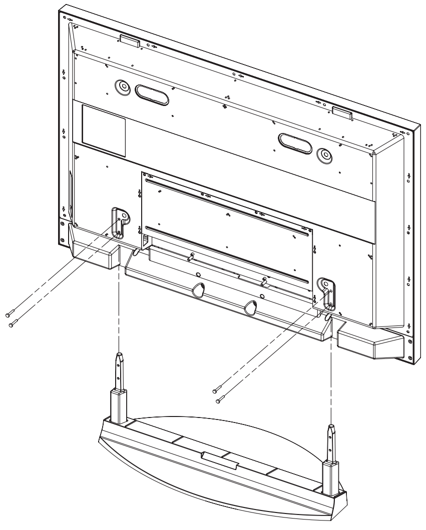
Make sure to use the top center, and not the left or the right side of the product to adjust the angle.

Notes

- Contact an authorized technician when installing the wall attachment panel.
- After hanging the TV panel on the wall attachment panel, make sure that the Insulation holders are completely secured.
- Be careful not to get your fingers caught during installation.
- Make sure the wall attachment panel brackets are tightened. Otherwise, the TV panel may fall down.
- Please secure the mounting bracket on the wall surface after setting its angle at 0°.

11-3-6 How to assemble the Stand-Base

1 Using the 4 screws for securing the stand pegs and the monitor, firmly attach the monitor to the stand pegs. (The exterior of the set may be different than the picture.)



Warning

Firmly secure the stand to the TV before moving it, as the stand may fall and could cause serious injury.

➤ Two or more people should carry the TV. Never lay the TV on the floor because of possible damage to the screen. Always store the TV upright.

MEMO

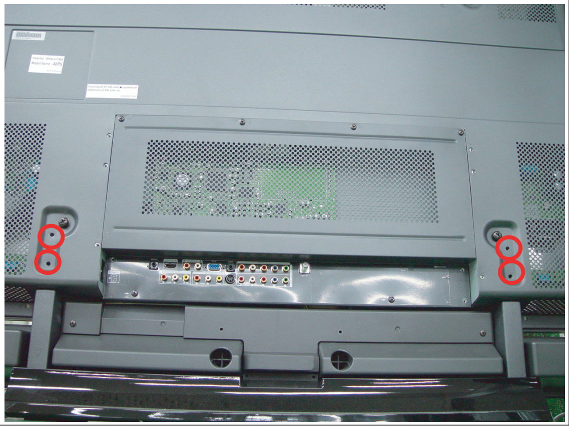
12. Disassembly & Reassembly

12-1 Overall Disassembly & Reassembly

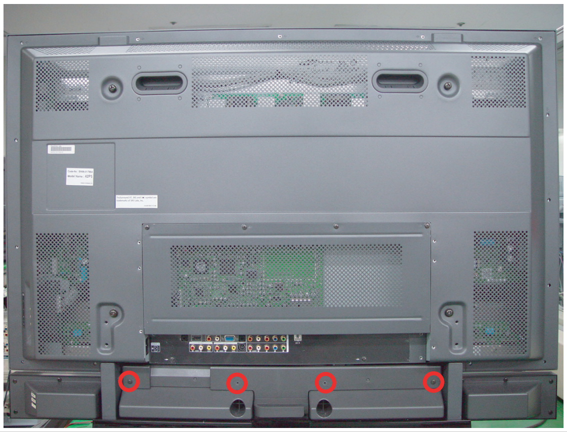
⚠ Notice

- Be sure to separate the power cord before disassembling the unit.
- Discharge the capacitors first when separating PCB's with high capacity capacitors such as SMPS, X Drive Board, Y Drive Board, etc. (A spark may be generated by the electric charge, and there is danger of electronic shock.)
- Check that the cables are properly connected referring to the circuit diagram when disassembling or assembling the unit taking care not to damage the cables.
- Take care not to cause a flaw in the Glass Filter in the front.
- Assemble the boards in the reverse order of the disassembly.
- The plasma must be layed down on a flat padded surface for disassembly and reassembly.

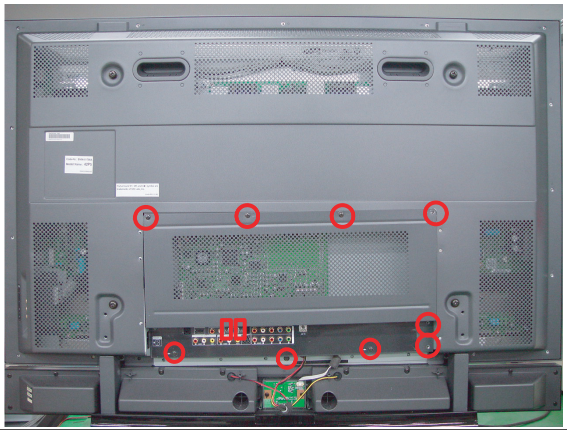
12-1-1 Separation of Stand

Part Name	Description	Description Photo
Stand	① Remove 4 screws. : PH,+,WSP,S,M4,L35,ZPC(BLK) ② Pull the stand down to remove it from the unit. ⚠: Please lay the PDP unit face down on a soft surface when removing the stand.	

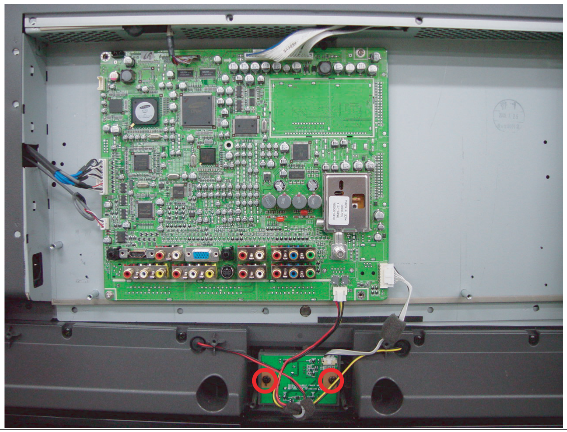
12-1-2 Separation of ASSY COVER-STAND CABLE

Part Name	Description	Description Photo
Cover-Stand	① Remove 4 screws on the SPEAKER-COVER : BH,+,B,M4,L12,ZPC(BLK) ② Remove the SPEAKER-COVER.	

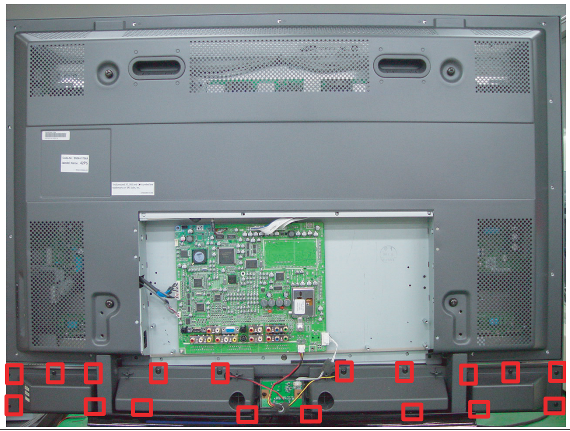
12-1-3 Separation of ASSY COVER P-REAR TOP

Part Name	Description	Description Photo
Rear Top	① Remove the 9 screws on the cover rear. : BH,+,-,S,M4,L8,ZPC(BLK) ② Remove the 2 Hex nuts for the PC input. : M3,L6,NI PLT,SUM24L,#4-40 ③ Remove the cover rear.	

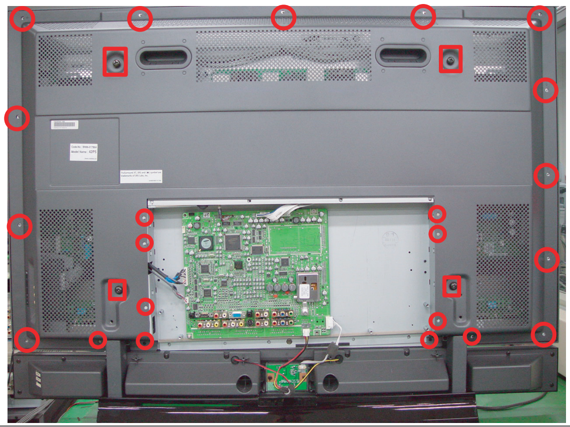
12-1-4 Separation of ASSY POWER & IR Board

Part Name	Description	Description Photo
Power & IR Board	① Remove 2 screws on the POWER IR Assy : BH,+,B,M4,L12,ZPC(BLK) ② Remove the ASSY POWER IR Board.	

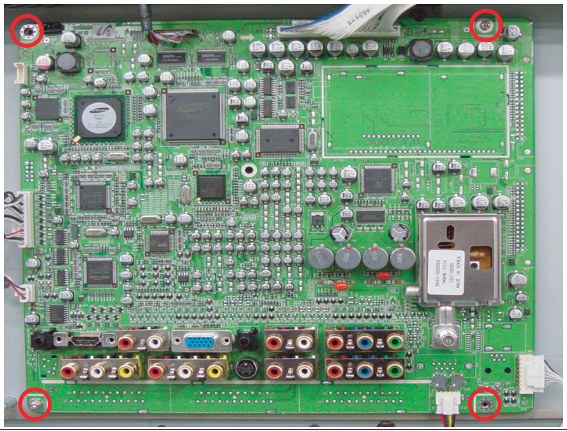
12-1-5 Separation of ASSY COVER SPEAKER

Part Name	Description	Description Photo
Cover Speaker	① Remove the 18 screws on the speaker cover. : BH,+,B,M4,L12,ZPC(BLK) ② Remove the SPEAKER-COVER.	

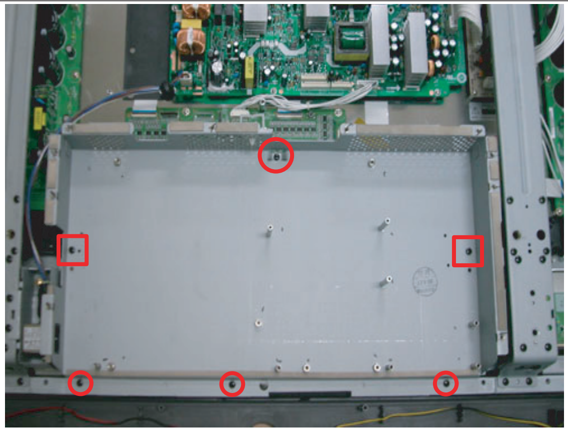
12-1-6 Separation of ASSY COVER P-REAR

Part Name	Description	Description Photo
Rear	① Remove 22 screws. : BH,+,-,S,M4,L8,ZPC(BLK) ② Remove 4 screws. : M8,L16,ZPC(BLK) ③ Remove the Back Cover.	

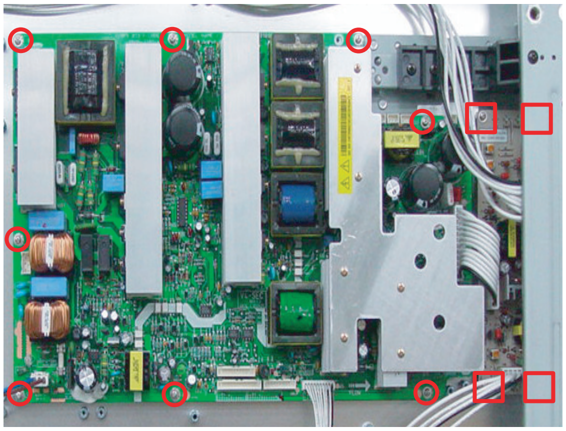
12-1-7 Separation of ASSY PCB MISC-MAIN

Part Name	Description	Description Photo
Main Board	① Remove 4 screws : PH,+,WWP,M3,L8,NI PLT ② Remove all connectors from the board. ③ Remove the Main Board.	

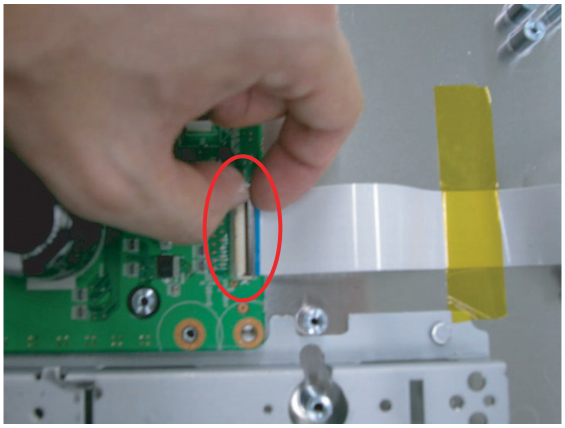
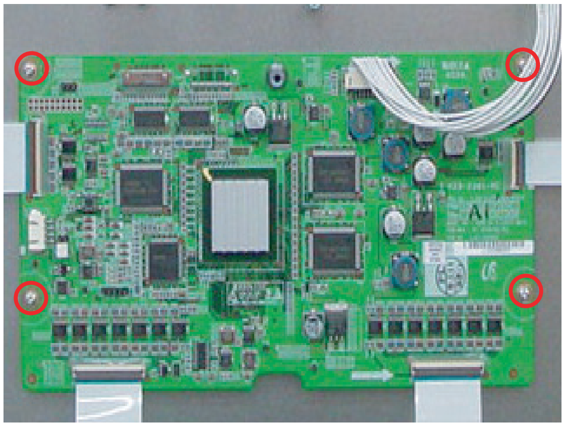
12-1-8 Separation of ASSY COVER P-REAR SUB

Part Name	Description	Description Photo
Cover P-Rear Sub	① Remove 4 screws. : BH,+,-,S,M4,L8,ZPC(BLK) ② Remove 2 screws. : BH,+,B,M4,L8,ZPC(BLK) ③ Remove the sub cover.	

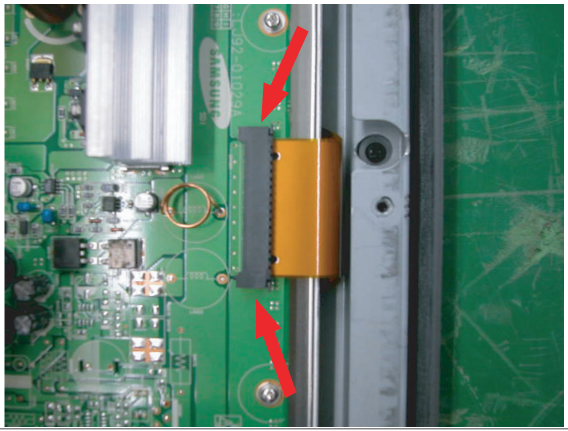
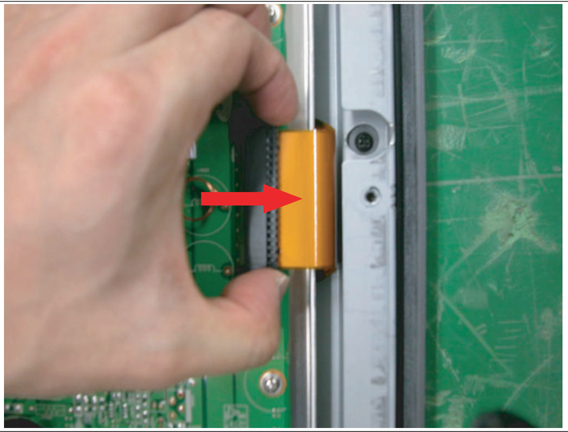
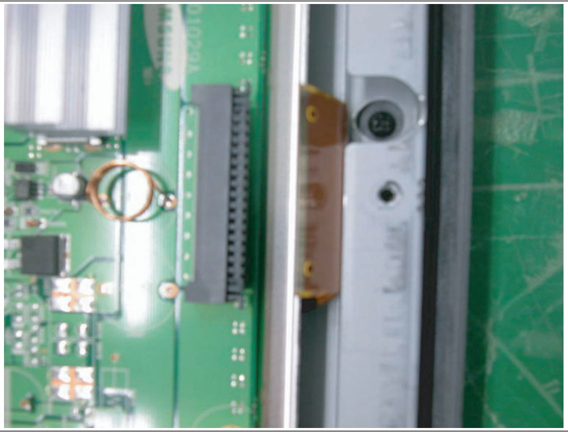
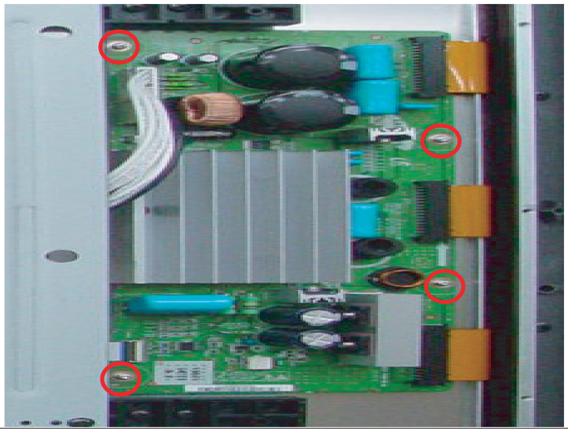
12-1-9 Separation of ASSY SMPS and ASSY SMPS DC-DC

Part Name	Description	Description Photo
SMPS	① Remove 8 screws. : PH,+,WWP,M3,L8,NI PLT ② Detach all connectors from the ASSY SMPS then remove the boards.	
SMPS DC-DC	③ Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ④ Detach all connectors from the ASSY SMPS DC DC then remove the board. ⚠ : Wear gloves when handling the power board as there may be some remaining electrical charge in the capacitor. Specifically, avoid touching any part of the capacitor.	

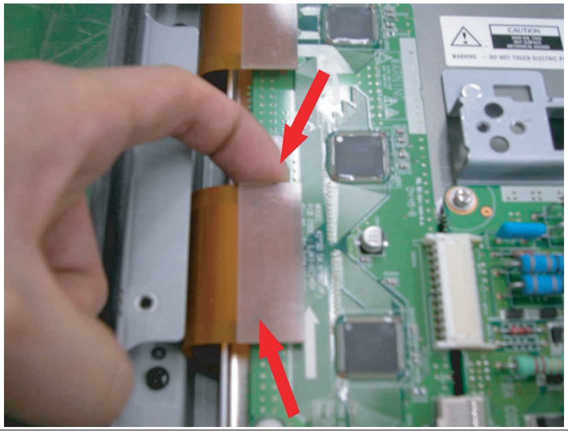
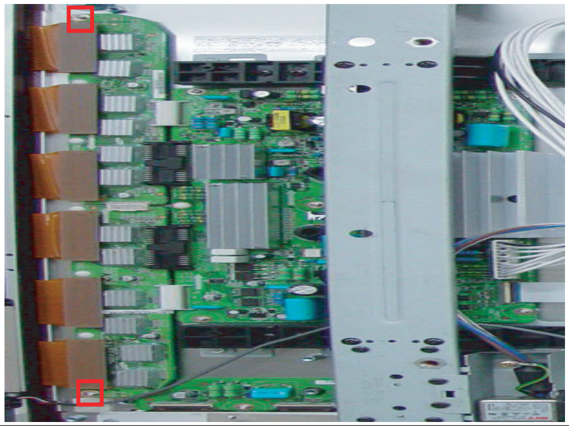
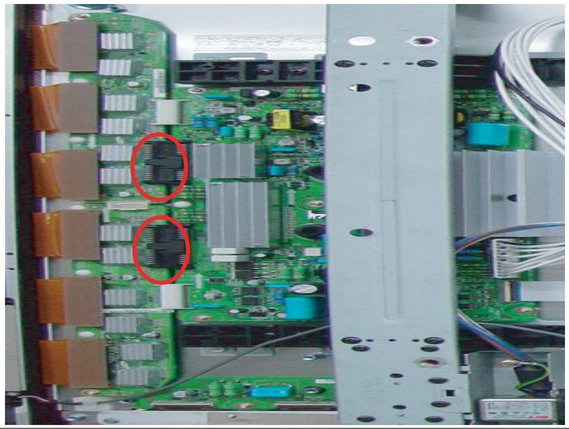
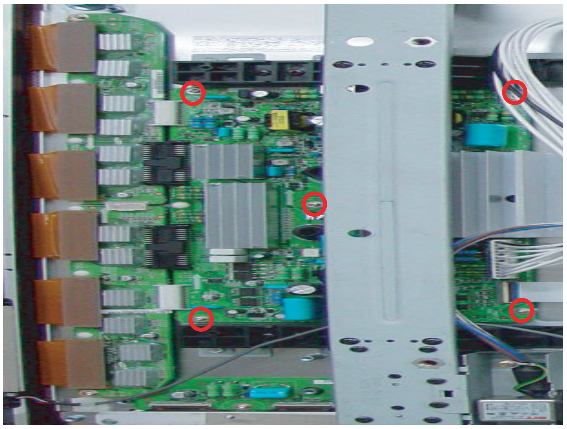
12-1-10 Separation of ASSY LOGIC BOARD

Part Name	Description	Description Photo
Flat Cable	① Take care when separating the Logic Board not to damage the Flat-Cable Connector Cover.	
Logic Board	① Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ② Remove the Logic Board.	

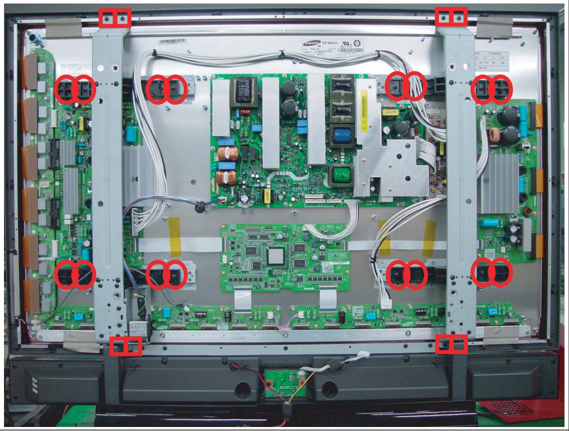
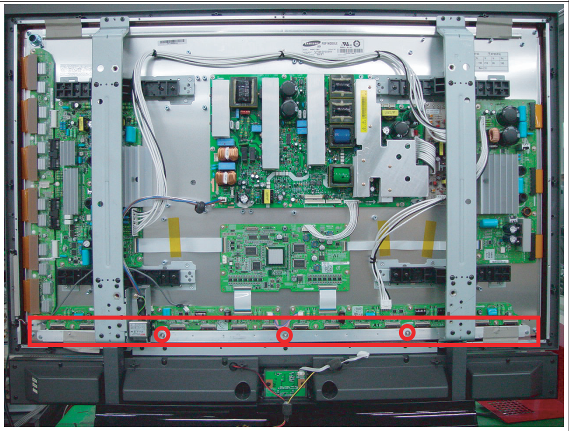
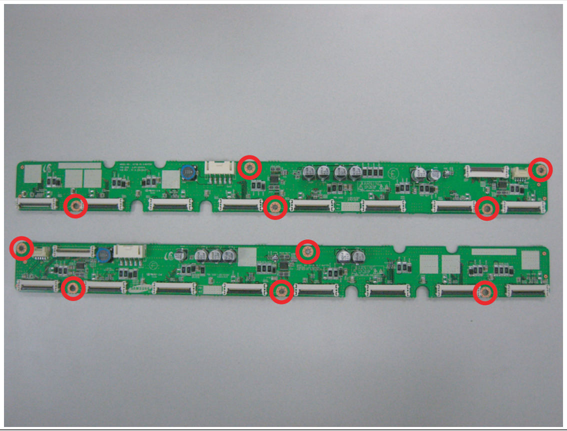
12-1-11 Separation of ASSY X DRIVE BOARD

Part Name	Description	Description Photo
X-Drive Board	① To separate the Flat Cable of the X-Board, press the upper and the lower sides of the connector.	
	① While pressing the connector, apply slight force toward the direction of the cable to release the connector.	
	① Remove the Flat cable.	
	① Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ② Detach all reamining connectors from the X-Drive Board. ③ Remove the X-Drive Board.	

12-1-12 Separation of ASSY Y DRIVE BOARD

Part Name	Description	Description Photo
Flat Cable	① Detech the 6 Scan Board connectors from the Panel Assy by pulling the holder from both the top and bottom ends.	
Y-Scan	① Remove 2 screws. : PH,+,WWP,M3,L8,NI PLT	
Connectors	① Separate the Scan Boards from the Y-Main Board by detaching the 2 connectors and remove the Scan Boards.	
Y Drive	① Remove 5 screws. : PH,+,WWP,M3,L8,NI PLT ② Detach all connectors from the Y-Main Board and remove the Y-Main Board.	

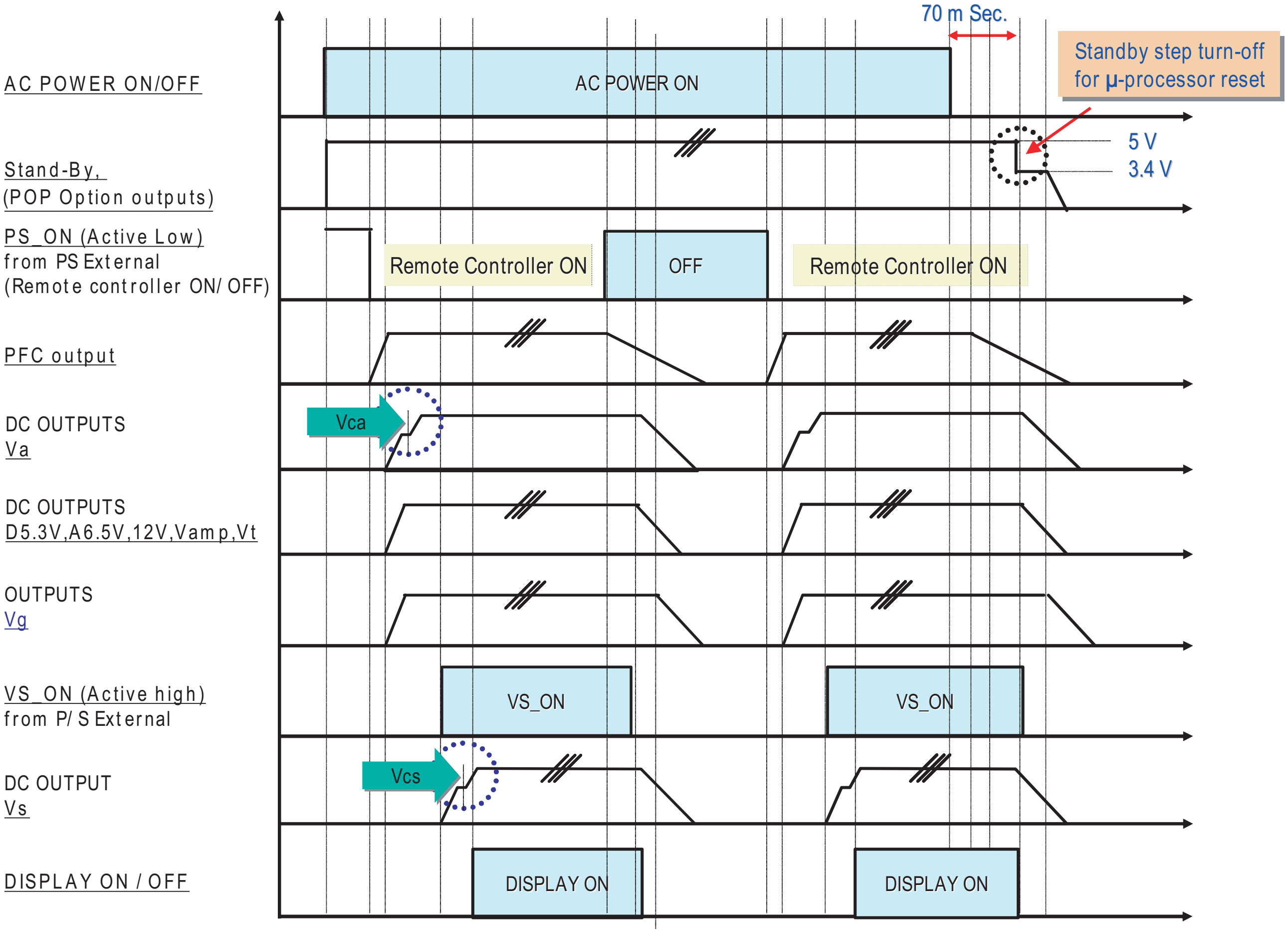
12-1-13 Separation of ASSY BUFFER BOARD

Part Name	Description	Description Photo
Wall Bracket	① Remove 8 screws. : BH,+,-,S,M4,L8,ZPC(BLK) ② Separate PDP module from Front cover. ⚠: Please lay the PDP panel face down on a soft surface when separating front cover. ③ Remove 16 screws. : BH,+,S,M4,L10,ZPC(BLK)	
TCP Cover	① Remove 3 screws. : PH,+,WWP,M3,L8,NI PLT ② Remove TCP covers.	
Buffer	① Remove 10 screws. : PH,+,WWP,M3,L8,NI PLT ② Remove the E-Board, F-Board.	

MEMO

13. Circuit Description

13-1 Power ON/OFF Signal Timing Sequence


AC POWER ON/OFF
AC POWER ON
70 m Sec.
Standby step turn-off for µ-processor reset
Stand-By,
(POP Option outputs)
5 V
3.4 V
PS_ON (Active Low)
from PS External
(Remote controller ON/ OFF)
Remote Controller ON
OFF
Remote Controller ON
PFC output
DC OUTPUTS
Va
Vca
DC OUTPUTS
D5.3V,A6.5V,12V,Vamp,Vt
OUTPUTS
Vg
VS_ON (Active high)
from P/ S External
VS_ON
VS_ON
DC OUTPUT
Vs
Vcs
DISPLAY ON / OFF
DISPLAY ON
DISPLAY ON

1. When connecting the AC power cord, Stand-By 5V from the Main SMPS is supplied to the Main Board (Pin 3 of CN1002 of Main Board).

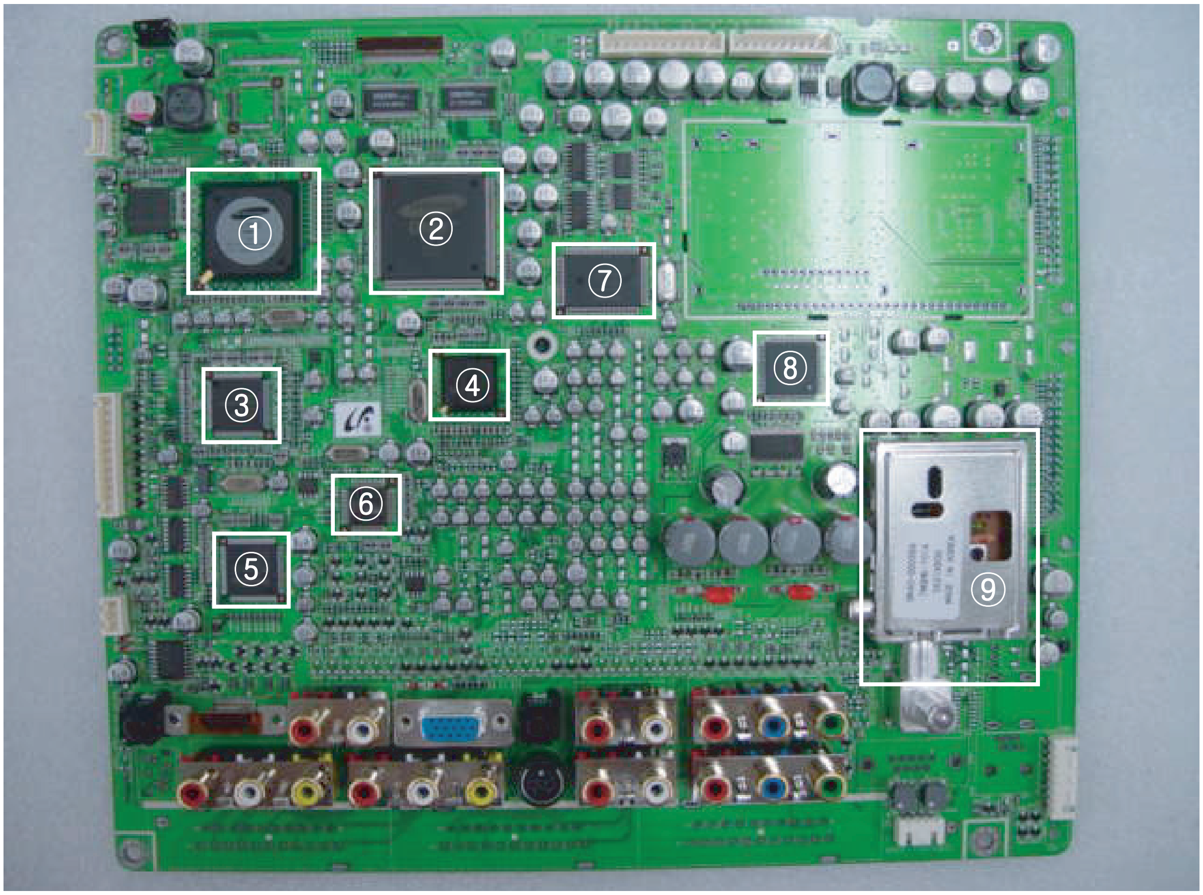
2. When pressing the Power button on the remote control or on the main body, PS_ON (Pin 5 of CN1002 of Main Board) changes from High to Low.

3. If the PS_ON signal changes to Low, the Main SMPS supplies power to the Main Board and Logic Board, and Va and Vg power is supplied to the DC-DC SMPS.

4. If the VS_ON signal from the Logic Board changes from Low to High, the Main SMPS supplies VS power to the X and Y Drive Board through the DC-DC SMPS, and the screen displays a picture on it.

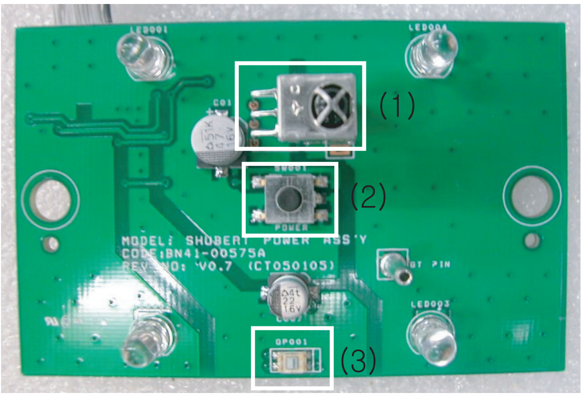
13-2 Partial Block Description

13-2-1 Main Board



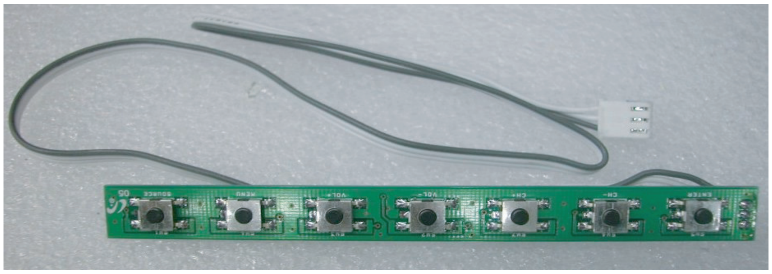
No	Name	Function	Description
①	SVP-EX62	Main Video Decorder+Deinterlacer+Scaler	A Scaler IC that generates the output resolution appropriate to the PDP panel and generates the PIP screen.
②	DNIe-L	Image Enhancer	The DNIe IC for visual quality improvement.
③	M30620SPGP	Main Micom	Generates various control signals required for operating the circuit.
④	SAA7119	Sub Video Decorder	The Video Decoder IC that converts the Y/C and Scart RGB signals for the main screen into 10 bit digita R, G, B signals.
⑤	SIL9993	HDMI Decorder	Converts the TMDS signal on the HDMI input into 8 bit digital R, G, B signals
⑥	S3F8668	Sub Micom	Detects the Power on/off signal from the remote control and the Power button and turns SMPS on or off, handles the Caption signal, and controls the signal for the LEDs on the front panel.
⑦	MSP4410G	Sound processor	Sound Processing IC
⑧	NSP6241	Sound Effect chip	Sound PWM IC
⑨	TMQZ6-405A	Tuner	Tuner CH Tuning and CVBS, SIF

13-2-2 Power Button Board


LED001
LED004
C01
(1)
SW001
(2)
POWER
MODEL: SHUBERT POWER ASS'Y
CODE:BN41-00575A
REV NO: V0.7 (CT050105)
GT PIN
LED003
OP001
(3)

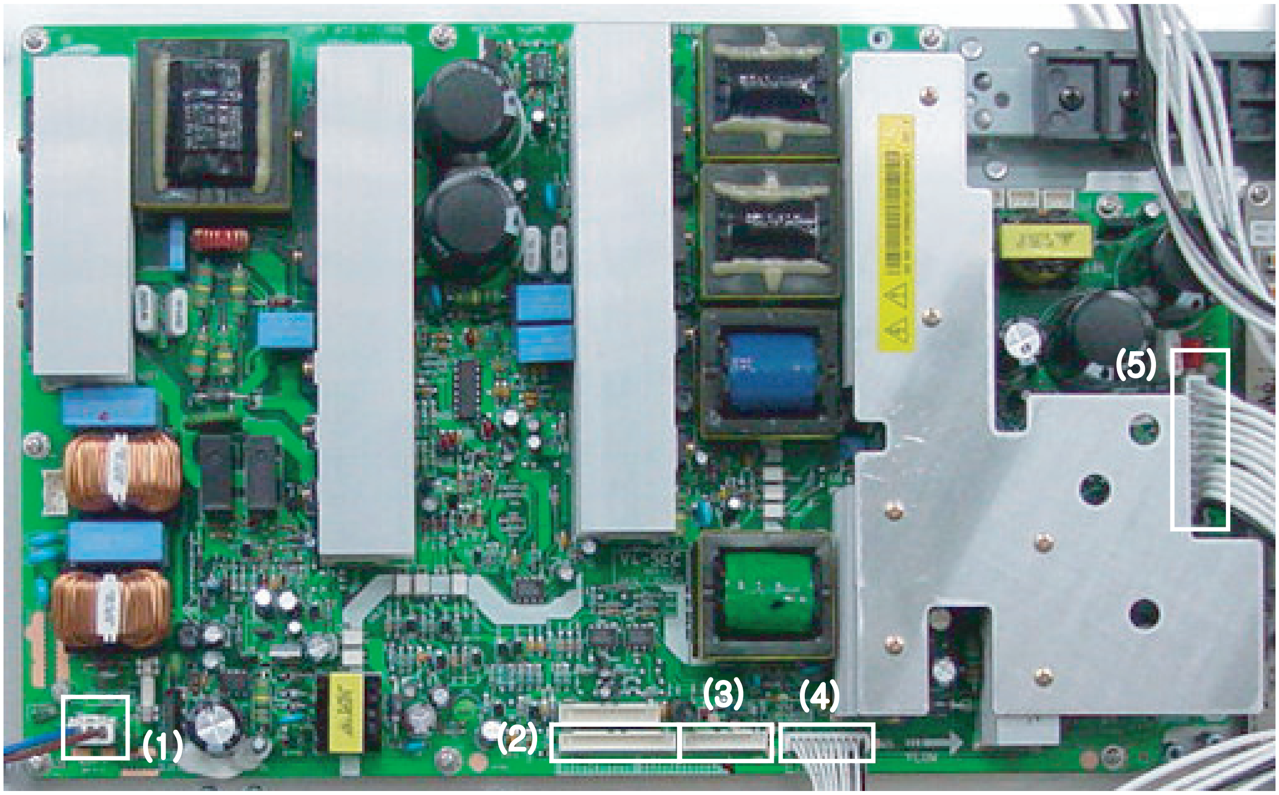
No	Loc. No.	Description
(1)	RM01	Remote Control Sensor
(2)	SW001	Power Button
(3)	OP001	The Illumination sensor that senses the quantity of light. It senses the illumination and automatically adjusts the screen brightness according to the surrounding brightness when the Power Saving Mode of the User menu is set to Auto.

13-2-3 Function Key Board



Function Key. Located on the side of the unit.

13-2-4 Main SMPS



(1) CN800: AC IN (90 ~ 264V)

(2) CN804-2 (MAIN SMPS) ↔ CN109(READY B'D)	
Pin No	Signal
1 ■	FAN-D
2	FAN-ON
3	STB5V
4	RTN
5	PS-ON
6	12V
7	RTN
8	RTN
9	VCA
10	VCS
11	RTN
12	5.3V
13	RTN
14	5.3V

(3) CN803(MAIN SMPS) ↔ CN108(READY B'D)	
Pin No	Signal
1 ■	RTN
2	VT(33V)
3	RTN_AMP
4	RTN_AMP
5	18V_AMP
6	18V_AMP
7	RTN
8	12V
9	RTN
10	6V

(4) CN810(Main SMPS) ↔ CN2013(Logic B'D)	
Pin No	Signal
1 ■	5.3V
2	5.3V
3	RTN
4	RTN
5	5.3V
6	RTN
7	PS-ON
8	N.C
9	VS-ON
10	STB 5V

(5) CN809(Main SMPS) ↔ CN3(DC-DC SMPS)	
Pin No	Signal
1 ■	5.3V
2	Vg
3	RTN
4	RTN
5	RTN
6	RTN
7	RTN
8	Va
9	Va
10	N.C
11	Vs
12	Vs

※ CN811, CN806, CN807 and CN808 are not used.

1. Outline (PDP 42inch/50inch SMPS)

Considering various related conditions, the switching regulator with good efficiency and allowing for its small size and light weight was used as the power supply for PDP 42inch(Schubert)/50inch(Strauss), VS requiring high power consumption Asymmetrical Half Bridge converter and flyback converter. To comply with the international harmonics standards and improve the power factor, active PFC(Power Factor Correction) was used to rectify AC input into +400V DC output, which in turns used as input to the switching regulator.

2. Input

The power supply shall be capable of supplying full rated output power over free voltage ranges that are rated 100 VAC - 240 VAC RMS nominal. Operating voltage : 90 VAC - 264 VAC

The power supply must be able to start up under peak loading at 90V AC. The power supply shall automatically recover from AC power loss. (Note that nominal voltages for test purposes are considered to be within +/- 1.0V of nominal).

STD_5V & Vpr2(3.3V) is a SELV standby voltage that is always present when AC mains voltage present.

3. Output

Output Name	Output Voltage	Output Current(Max.)	Using in PDP Driving
VS	+190V ~ 220V (210V)	2.0A	Sustain Voltage of Drive Board
VA	+60V ~ 80V (70V)	3.0A	Address Voltage of Drive Board
D5.3V	+5.3V	5.0A	
A6.5V	+6.5V	3.0A	
FAN_9V	+9V	0.2A	
VG	+15V	1.0A	
D12V	+12V	1.5A	
A12V	+5.3V	0.5A	
18VAMP	+18V	2.5A	Amp Voltage of Audio Board
VT	+33V	0.006A	
STD_5V	+5V	1.0A	Standby for Remote Control

4. Over Voltage Protection

The over voltage sense circuitry and reference shall reside in package that are separate and distinct from the regulator control circuitry and reference. No single point fault shall be able to cause a sustained over voltage condition on any or all outputs.

The supply shall provide latch-mode Over Voltage Protection as defined below.

Parameter	Min	Unit
VS(210V)	250 ~	V
VA(70V)	100 ~	V
VCC(+5.3V)	6.8 ~	V

5. Short Circuit and Over current Protection

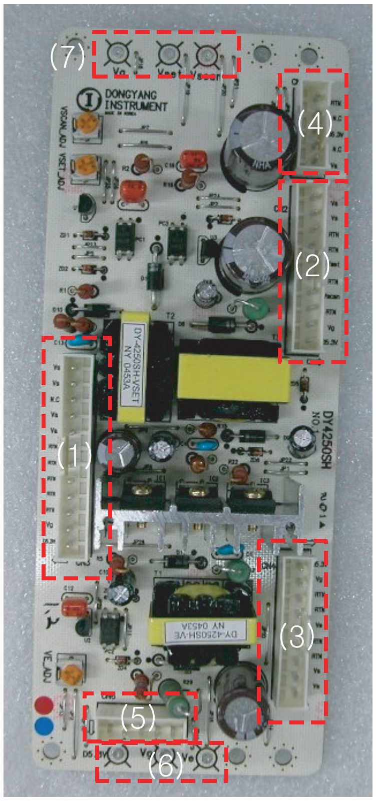
An output short circuit is defined as output impedance of less than 300mohms. The power supply shall shutdown and latch off for shorting VS DC rails to return. Shorts between main output rails and STD_5V shall not cause any damages to the power supply.

The power supply shall either shutdown and latch off until the short condition is removed, at which point the P/S shall recover.

The power supply shall be capable of withstanding a continuous short-circuit to the output without damage or over stress to the unit (components, PCB traces,connectors,etc.) under the input conditions specified in Section 3 above. Current Protection as defined below.

Output	Over Current Limit	Unit
VS(210V)	20A, Constant Current.(TBD)	A
VA(70V)	10A, Constant Current.(TBD)	A
Output except Vs,Va	No damage (Auto Recovery or Shut down.)	A

13-2-5 DC-DC SMPS



(1) CN809(Main SMPS) ↔ CN3(DC-DC SMPS)	
Pin No	Signal
1 ■	5.3V
2	Vg
3	RTN
4	RTN
5	RTN
6	RTN
7	RTN
8	Va
9	Va
10	N.C
11	Vs
12	Vs

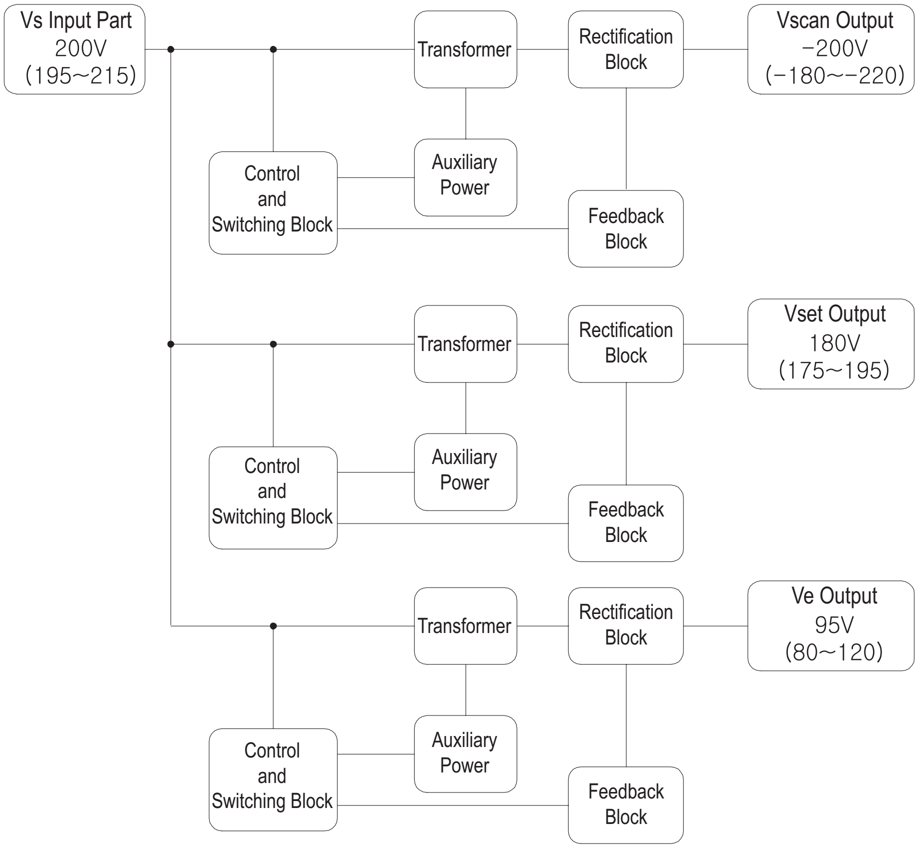
(4), (5) CN1, CN6 (DC-DC SMPS) ↔ CN2501(E-Buffer), CN2701(G-Buffer)	
Pin No	Signal
1 ■	RTN
2	N.C
3	5.3V
4	N.C
5	Va

(2) CN2(DC-DC SMPS) ↔ CN5007(Y B'D)	
Pin No	Signal
1 ■	Vs
2	Vs
3	RTN
4	RTN
5	Vset
6	RTN
7	Vscan
8	RTN
9	Vg
10	5.3V

(3) CN4(DC-DC SMPS) ↔ CN4000(X B'D)	
Pin No	Signal
1 ■	Vs
2	Vs
3	RTN
4	RTN
5	Ve
6	RTN
7	RTN
8	Vg
9	5.3V

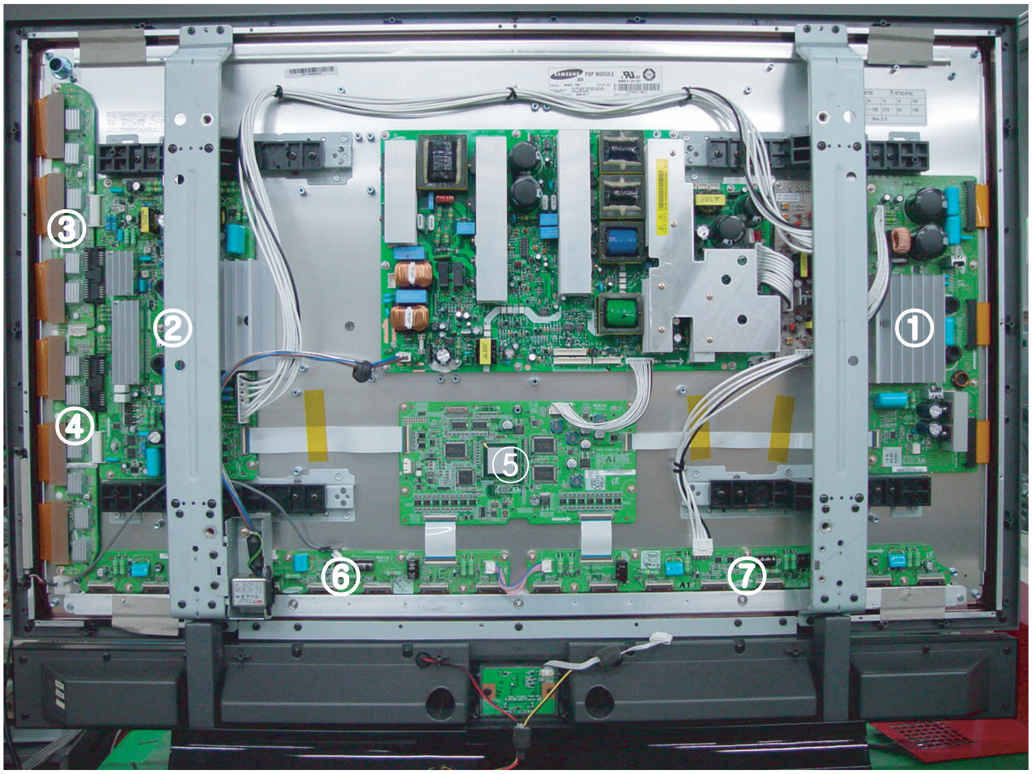
(6) D5.3V, Vg, Ve Test Point
(7) Va, Vset, Vscan Test Point

1. Block Diagram


Vs Input Part
200V
(195~215)
Transformer
Rectification Block
Vscan Output
−200V
(−180~−220)
Control and Switching Block
Auxiliary Power
Feedback Block
Transformer
Rectification Block
Vset Output
180V
(175~195)
Control and Switching Block
Auxiliary Power
Feedback Block
Transformer
Rectification Block
Ve Output
95V
(80~120)
Control and Switching Block
Auxiliary Power
Feedback Block

DC DC SMPS receives Vs input (195~215V) from the Main SMPS and the necessary Vscan, Vset and Ve voltages are output to operate the PDP Module as shown in the block diagram above.

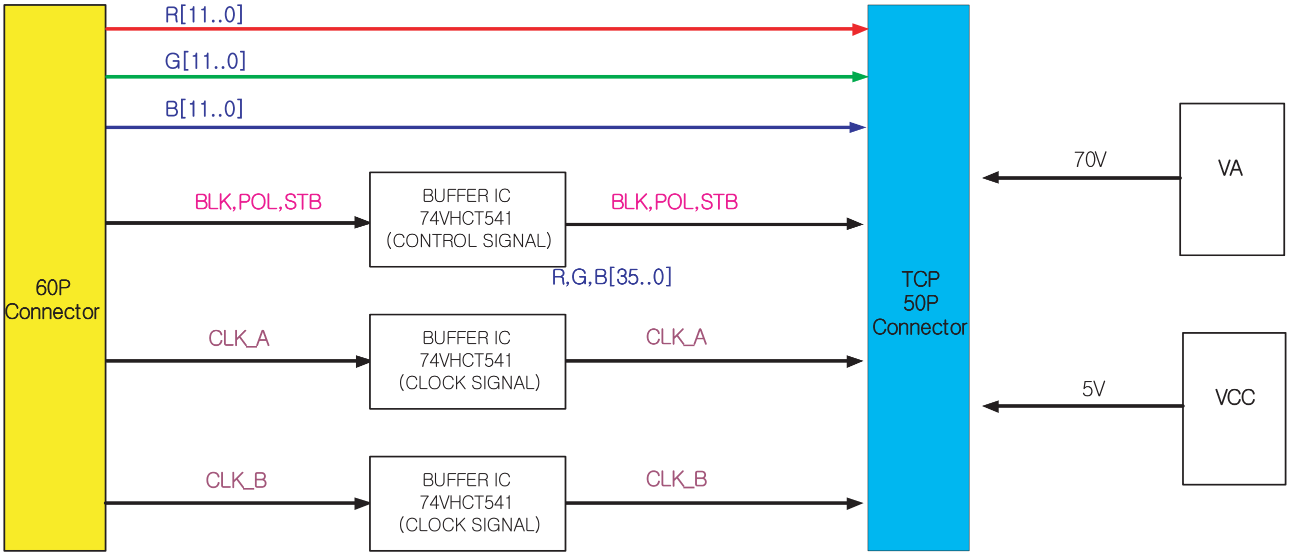
13-2-6 PDP Module



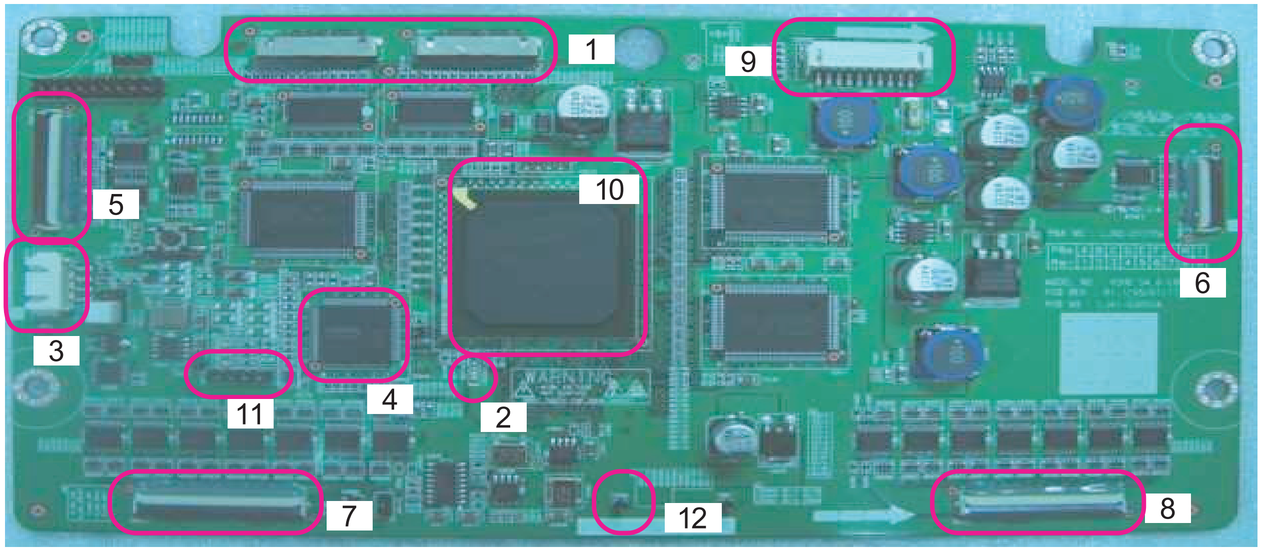
No	Assy Name	Description
①	ASSY PDP P-X MAIN BOARD	X Drive Board
②	ASSY PDP P-Y MAIN BOARD	Y Drive Board
③	ASSY PDP P-Y BUFF UPPER BOARD	Y Buffer Upper Board
④	ASSY PDP P-Y BUFF LOWER BOARD	Y Buffer Lower Board
⑤	ASSY PDP P-LOGIC BOARD	Logic Board
⑥	ASSY PDP P-ADDRESS E BUFF BOARD	Address E Buffer Board
⑦	ASSY PDP P-ADDRESS F BUFF BOARD	Address f Buffer Board

1. Logic Block

■ Logic Block Diagram


60P Connector
R[11..0]
G[11..0]
B[11..0]
BLK,POL,STB
BUFFER IC 74VHCT541 (CONTROL SIGNAL)
BLK,POL,STB
R,G,B[35..0]
CLK_A
BUFFER IC 74VHCT541 (CLOCK SIGNAL)
CLK_A
CLK_B
BUFFER IC 74VHCT541 (CLOCK SIGNAL)
CLK_B
TCP 50P Connector
70V
VA
5V
VCC

■ A name of main part of Logic Board and vocabulary.



Item	Name	Explanation
①	LVDS Connector	The connector to receive the RGB, H, V, DATAEN and DCLK signals that have been LVDS encoded through the video board. At present, there are 2 LVDS, both internal and external, and only LVDS will be provided in the final version of the board.
②	Operating Status LED	The LED that shows whether the Sync and Clock signal is properly supplied to the logic board (Normal Status: Blinks at 0.8 second intervals)
③	I2C Connector	The connector for the Key Scan board that checks and controls the 512K data.
④	MICOM(ARM-PROCESSOR)	512K including the Gamma Table, APC Table, drive waveform timing and other options is saved to internal flash memory.
⑤	Y Connector	The connector to output the control signal for the Y drive board.
⑥	X Connector	The connector to output the control signal for the X drive board.
⑦	CN2075(E-Adderss Buffer Connector)	The connector to output the address data and the control signal to the E-buffer board.
⑧	CN2076(F-Adderss Buffer Connector)	The connector to output the address data and the control signal to the F-buffer board.
⑨	Power Connector	The connector to receive power (5V, 3.3V) for the Logic board.
⑩	ASIC CHIP	The main processor that generates and outputs the logic drive signal and the address data.
⑪	MICOM LOADING 5PIN CONNECTOR	The connector to load the Micom drive program. The program is loaded by connecting to the GA-WRITER.
⑫	VTOGG	TP for V Sync Check

■ About Logic Board

The Logic Board consists of a Logic Main board, which processes the video signal input through LVDS and creates the address driver output and XY drive signals, and a Buffer board, which buffers the output signal and outputs the signal to the Address Driver IC (TCP IC).

Logic Board		Function	Remark
Logic Main		- Video Signal Processing (W/L, error diffusion, APC) - Outputs the Address Driver Control and Data Signals to the Buffer board. - Outputs the XY Drive Board Control Signal	
Buffer Board	E Buffer Board	Outputs data and control signals to the bottom left TCP IC.	
	F Buffer Board	Outputs data and control signals to the bottom right TCP IC.	

■ Major Check Points and Waveforms

- The waveform during a Normal Operation

When the PDP set and the Logic Board are properly operating, the Operation Status LED blinks at approximately 0.8 second interval as shown in Figure 1.

If the set is out of order, check the Operation Status LED first, and check that the output waveform is normal using an oscilloscope.

Check if the waveform is the same as shown in Figure 2 by connecting the oscilloscope to the No. 12 TP in Figure 1. Check if the waveform is the same as in Figure 3 by connecting the oscilloscope to the connector that is connected to the Buffer board.

If the measured waveform is different from the following waveforms, the board must be replaced.

To check the waveforms, refer to the following waveform patterns.

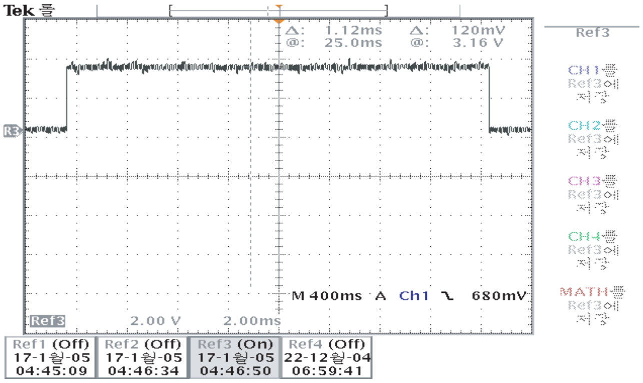


Figure 2. Normal V-SYNC Output Waveform

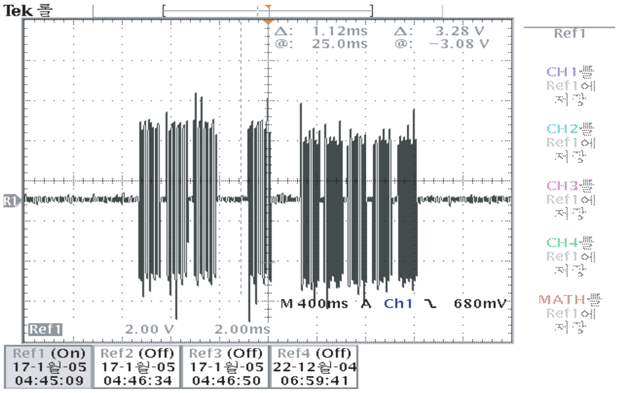


Figure 3. Normal Address Data Output Waveform

1. X, Y Control Block

■ Drive Circuit Definition

The Drive Circuit is a circuit that generates a waveform (high-voltage pulse) for the X and Y electrode group of the panel's external port so as to control the panel. The high-voltage switching pulse is generated through the combination of the IC HYBRID (Drive block + IGBT) and FET.

■ Drive Circuit Mechanism

A picture is displayed on the PDP by applying voltage to the X, Y and ADDRESS electrodes of each pixel according to the appropriate condition. The drive waveform applied to 42HD V4 is of the ISSS (ISSS: Interweaving Scan and Selective Sustain with Scan IC) type and has IDS (InDependent Sustain) in the Scan section unlike the existing ADS. Discharges within a PDP pixel can be classified into 3 types:

① Address Discharge: To form a wall voltage within the pixel by giving information (applying DATA voltage) to the pixel to be lit.

② Sustain Discharge: Sustain Discharge is a display section that voluntarily maintains the discharge of the pixels whose wall voltage has been formed by the Address Discharge. (Optical output for displaying a picture is generated).

③ Erase Discharge: To selectively perform Address Discharge for each pixel, all pixels on the panel should be in the same status (the wall electric charge status and space electric charge status must be the same). Therefore, the Erase Discharge section is an important component for guaranteeing the drive margin, and is implemented by various methods such as applying a log waveform. However, the current 42HD V4 has adopted a wall voltage control through an RA (Repeated Auto-quenching) reset that separates the discharge area and performs switching to perform an efficient erase operation, while the gradient was the same in the RAMP section in the existing approach.

1) Address Discharge

A discharge that is caused by the difference between the plus electric potential (Va apply voltage of 65~70V + Positive Wall Charge) of the electrode and the negative electric potential (Applied GND Level + Negative Wall Charge) of the Y electrode. The Address discharge forms a wall voltage within the pixel to display color (to be discharged) before the Sustain Discharge period. That is, the pixel whose wall charge has been formed by the Address Discharge forms a Sustain Discharge vis the following Sustain pulse.

2) Sustain Discharge

A Sustain Discharge is a Self-Sustaining Discharge formed by the accumulation of the electric potential of the Sustain pulse (generally 200 ~ 210 Volt) alternating over the X and Y electrodes during the sustain period, and the wall charge depending on whether the pixel has previously been discharged or not. That is, it is controlled by the memory characteristics, one of the basic characteristics of the AC PDP (in that the past operating conditions determine the current status). That is, if a wall voltage exists on the pixel (if the pixel is on), a discharge is formed again because the applied voltage, which is the sum of the following applied Sustain voltage and the wall voltage, is higher than the discharge threshold voltage. If no wall voltage exists on the pixel (if the pixel is off), a discharge will not occur because the Sustain voltage is not higher than the discharge threshold voltage. The Sustain Discharge period is the period for generating actual optical output so as to display a picture on the PDP screen.

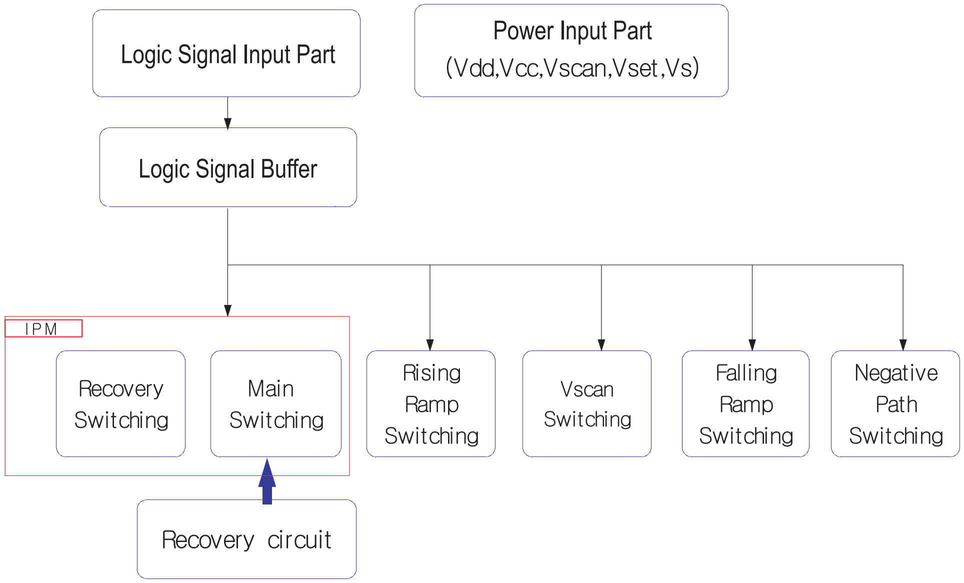
3) Erase Discharge

The purpose of a Reset (Erase) Discharge is to create uniformity of the wall voltage within all panel pixels. It evens the wall voltages regardless of the Sustain Discharge in the previous stage. The Erase Discharge has to remove the wall voltage introduced by the Sustain Discharge by supplying ions or electrons by a discharge. When the wall voltage is removed through a discharge, the time when the reverse polarity is applied to the wall voltage (fine width erasing) is to be limited or ions or electrons are to be supplied by a weak discharge (low voltage erasing) so as to prevent a wall charge in reverse polarity.

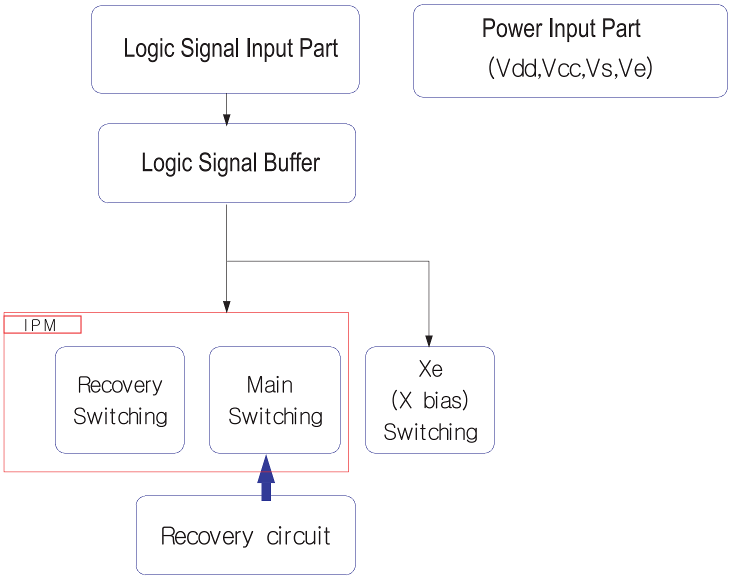
There are 2 known weak discharge (low-voltage) erase methods. 1) A log waveform adopted by F company and 2) a weak erase discharge via a ramp waveform adopted by Matsushita and other companies. Both methods control the externally applied voltage by the difference of the wall voltage of the pixel by applying the rising gradient of the erasing waveform slowly, because the discharge begins when the sum of the existing remaining wall voltage and the rising waveform voltage exceeds the drive threshold voltage. In addition, a weak discharge is introduced, because the applied voltage is low.

■ Drive Circuit Operating Block Diagram

- Y Drive Board


Logic Signal Input Part
Power Input Part
(Vdd,Vcc,Vscan,Vset,Vs)
Logic Signal Buffer
IPM
Recovery Switching
Main Switching
Rising Ramp Switching
Vscan Switching
Falling Ramp Switching
Negative Path Switching
Recovery circuit

- X Drive Board


Logic Signal Input Part
Power Input Part
(Vdd,Vcc,Vs,Ve)
Logic Signal Buffer
IPM
Recovery Switching
Main Switching
Xe
(X bias)
Switching
Recovery circuit

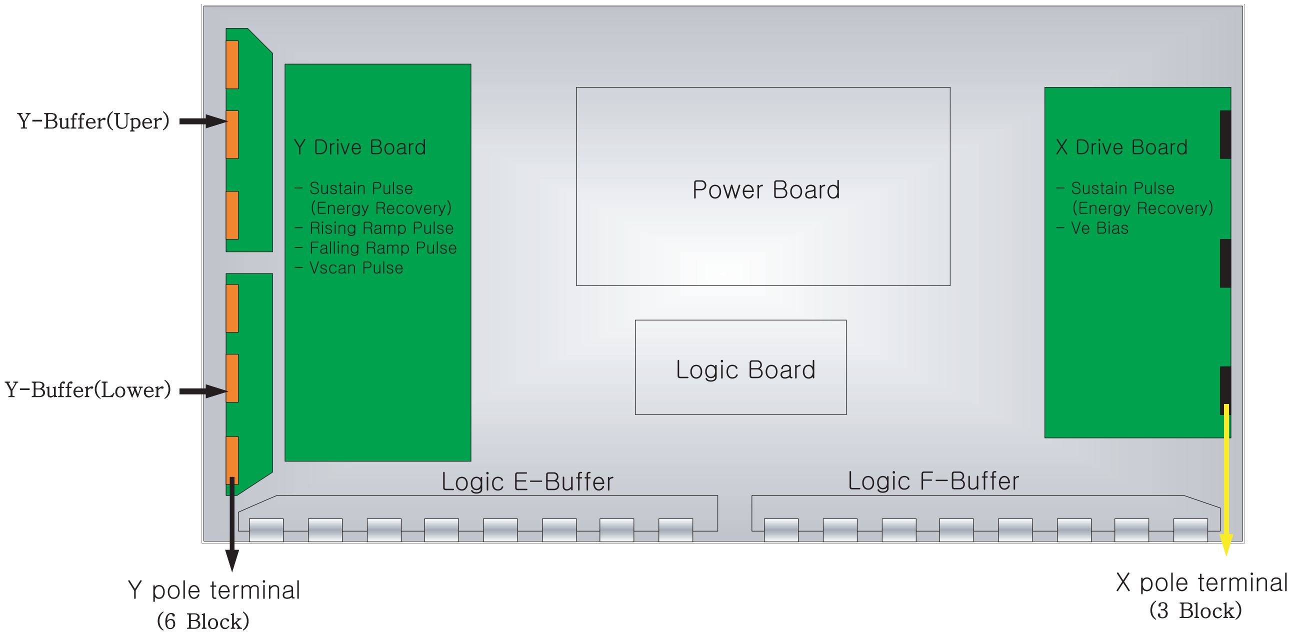
■ Requisite Components Necessary for Drive Board Operation

- Power : Supplied from the power board. The optimal value may differ from the following:
  a) Vs : 205V - Sustain
  b) Vset : 195V - Y Rising Ramp
  c) Ve : 100V - Ve bias
  d) Vscan : -190V - Scan low bias
  e) Vnf : -175V - Y falling Ramp (Created by the DC-DC power block of the Y Drive board)
  f) Vsc_h : -70V - Scan high bias (Created by the DC-DC power block of the Y Drive board)
  g) Vdd : 5V - Logic signal buffer IC and IPM
  h) Vcc : 15V - Gate drive IC ¹× IPM

- Logic Signal : Supplied by the Logic board. Gate signal of each switch

■ Drive Circuit Architecture and Function Description

- Description of the function of each board


Y-Buffer(Uper)
Y-Buffer(Lower)
Y Drive Board
- Sustain Pulse
(Energy Recovery)
- Rising Ramp Pulse
- Falling Ramp Pulse
- Vscan Pulse
Power Board
Logic Board
X Drive Board
- Sustain Pulse
(Energy Recovery)
- Ve Bias
Logic E-Buffer
Logic F-Buffer
Y pole terminal
(6 Block)
X pole terminal
(3 Block)

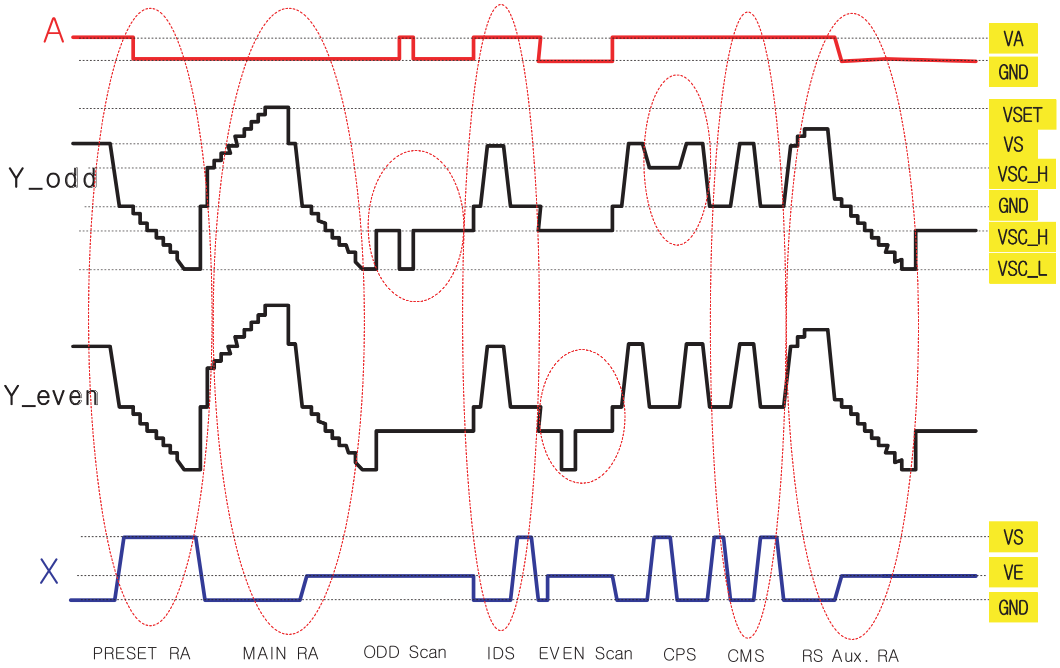
1) X Drive Board
This is connected to the X port part of the panel. 1) Sustain voltage waveform (including ERC) is output, and 2) Ve bias in the Scan section is maintained.

2) Y Drive Board
This is connected to the Y port part of the panel. It outputs 1) Sustain voltage wave form (including ERC), and 2) Y Rising, Falling Ramp waveform, and maintains 3) Vscan bias.

3) Y Buffer Board (Upper, Lower)
This board supplies the Scan waveform to the Y port and consists of Upper and Lower boards. For an HD grade unit, 6 scan driver ICs (TEXAS INSTRUMENT SN755867APZP: 64 outputs) are mounted on the board.

■ Drive Waveform Specifications

- Drive Waveform



- Description of the function of each pulse

1) Y Preset RA Pulse
This is supplied to the first sub-field and erases the discharge status of the previous subfield.

2) Y Main RA Pulse
During the Y Rising Ramp section, approximately 300V~350V (Vscan-h + Vset) of external voltage is supplied to the Y electrode, and a weak discharge is started when each gap voltage is equal to the discharge start voltage. While maintaining the weak discharge, as a whole, negative wall charges are accumulated on the Y electrode and positive wall charges on the X electrode and the address electrode.
During the Y Falling Ramp section, the negative wall charges accumulated on the Y electrode by the approximately 105V of X bias are used to erase the positive wall charges on the X electrode, and the address electrode maintains most of the positive wall charges accumulated during the (0V) Rising Ramp section preparing for the next address discharge.

3) Y Scan Pulse (Odd/Even)
A scan pulse classifies the Y electrode into Odd and Even lines and selects FPC output electrodes sequentially (one line-at-a-time). At this time, Vscan is called the Scan Bias Voltage.
A Vscan voltage of approximately -175 Volt (Vsc_1) is supplied to the electrode lines. For the other lines, -56 volt (Vsc_h is higher than Vscan-l by 120V) is supplied. However, negative wall charges are accumulated on the Y electrode by the Ramp pulse, and positive wall charges are accumulated on the address electrode, and the voltage applied to the cells, to which the Address pulse (70V~75V) has been applied, becomes higher than the discharge voltage. An address Discharge occurs as a result. Since the Scan and Data pulse is applied one line at a time as above, the address time of PDP is very long.

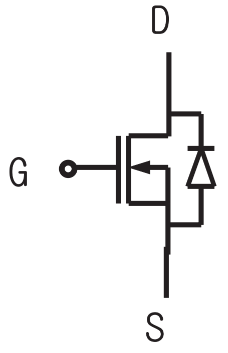
4) IDS Pulse (InDependent Sustain Pulse)
Since an Odd Scan is performed first, the Odd line output sustains optical twice during the IDS section. At this time, a Sustain Discharge does not occur for the Even line because the Even line is not scanned.

5) CPS Pulse (ComPare Sustain Pulse)
By floating the Odd line that caused the Sustain Discharge in the IDS section to the Vscan-h level, and introducing the Sustain Discharge only for Even lines, it compensates for the optical output difference between the Even and Odd lines.

6) CMS Pulse (ComMon Sustain Pulse)
Actual optical is output during the common Sustain Discharge section.

■ Mechanism of the FET Operation and High-Voltage Switching

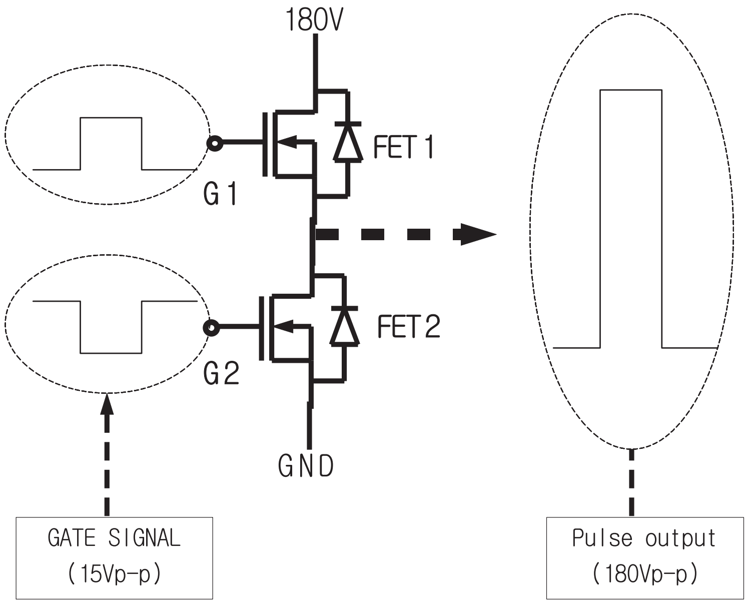
Mechanism of the FET Operation



G : Gate
S : Source
D : Drain

1) When the signal is output to the gate, (positive electric potential) FET short circuits (i.e. Conductor of resistance 0)
2) When no signal is output to the gate (GND), FET changes to an open circuit (i.e. an insulator of resistance ∞).

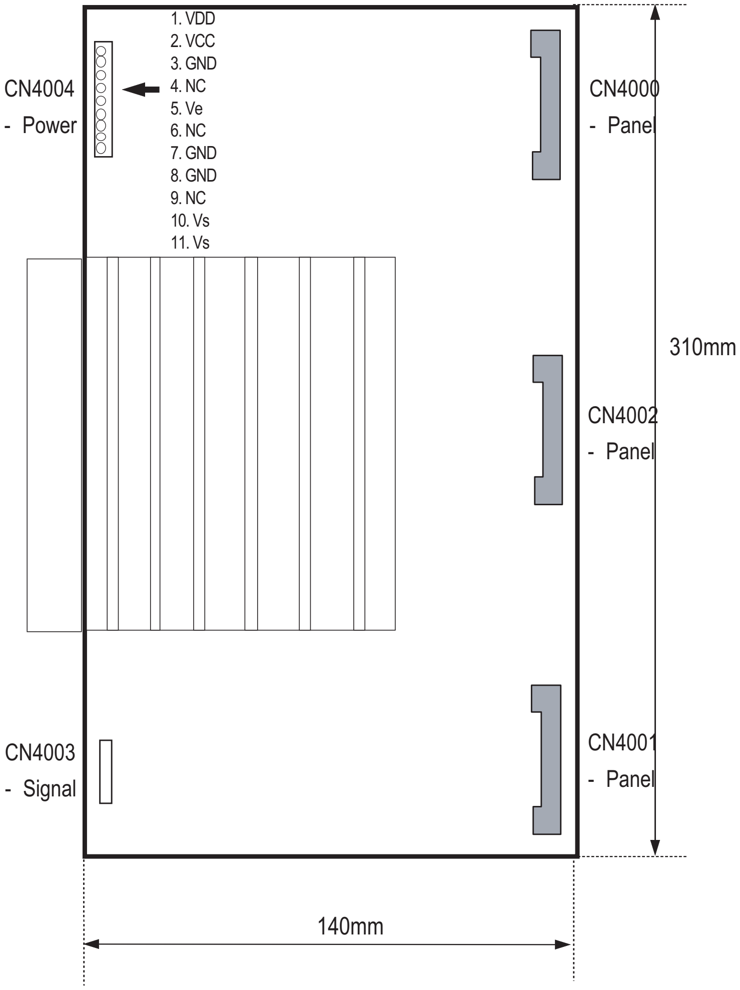
High-Voltage Switching of the FET Operation



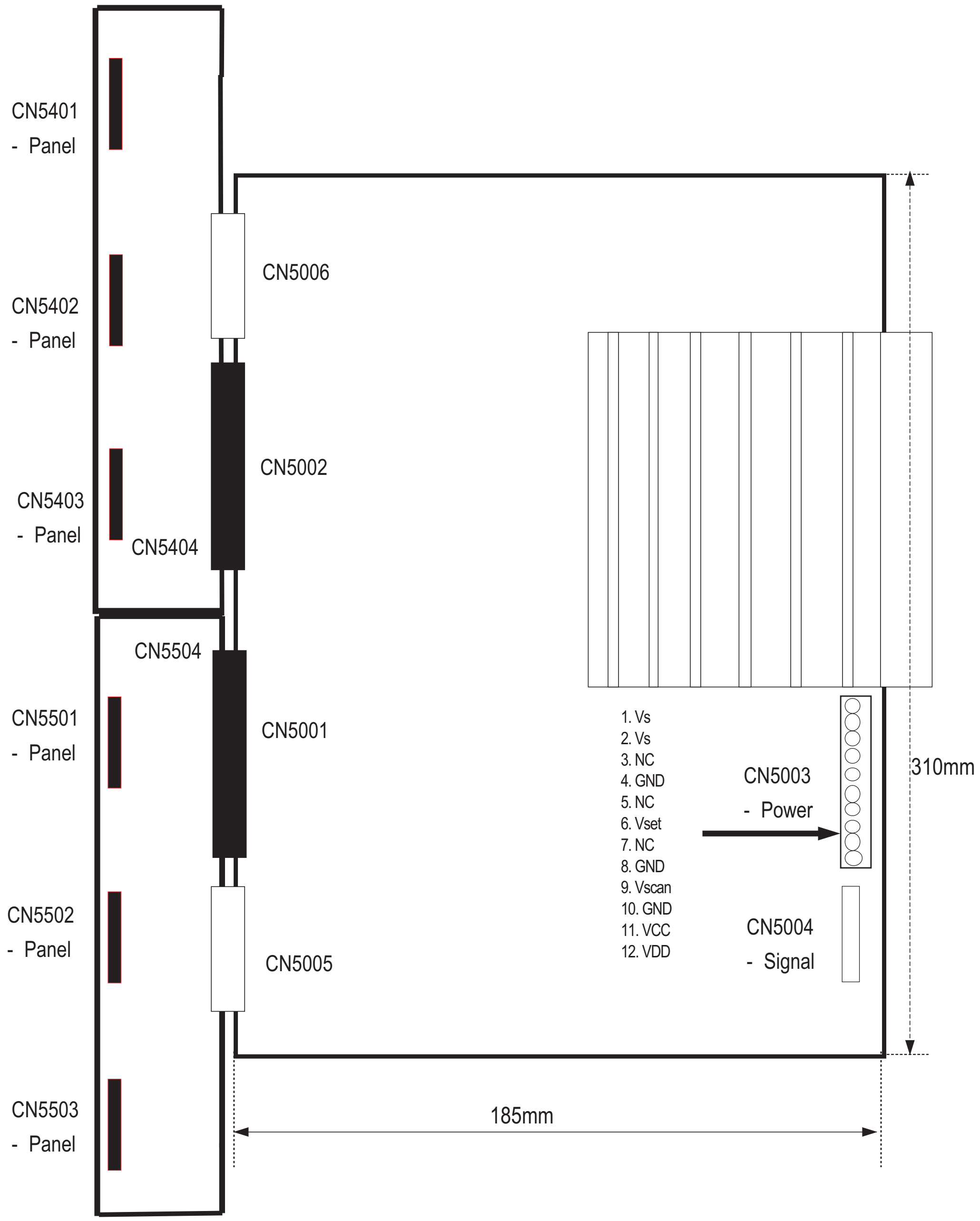
1) When no signal is applied to G1, FET1 is opened and when the signal is applied to G2, FET2 short circuits, GND is output via the output terminal.
2) When a signal is applied to G1, FET1 short cir cuits and when no signal is applied to G2, FET2 is opened, and 180V is output via the output terminal.

■ Drive Board Connector Layout

1) X-Main


CN4004
- Power
1. VDD
2. VCC
3. GND
4. NC
5. Ve
6. NC
7. GND
8. GND
9. NC
10. Vs
11. Vs
CN4000
- Panel
310mm
CN4002
- Panel
CN4003
- Signal
CN4001
- Panel
140mm

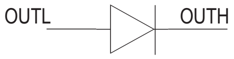
2) Y-Main


CN5401
- Panel
CN5402
- Panel
CN5403
- Panel
CN5404
CN5006
CN5002
CN5504
CN5501
- Panel
CN5001
CN5502
- Panel
CN5005
CN5503
- Panel
1. Vs
2. Vs
3. NC
4. GND
5. NC
6. Vset
7. NC
8. GND
9. Vscan
10. GND
11. VCC
12. VDD
CN5003
- Power
CN5004
- Signal
310mm
185mm

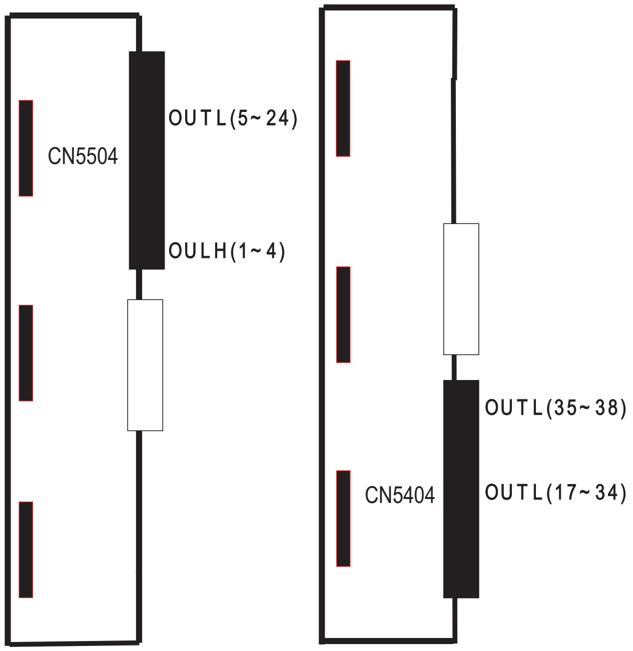
■ Troubleshooting the Drive Board

1) Y Buffer

- To check whether the Y Main board is properly working, check the operation of the Y Buffer first.
- Separate the connector of the Y Buffer from the Y Main board
- Check OUTL and OUTH and confirm that the forward voltage reduction is between 0.4V ~ 0.5V.
  UP - CN5407 1~10pin - OUTH / 11~33pin - OUTL
  LOW - CN5507 50~41pin - OUTH / 40~17pin - OUTL



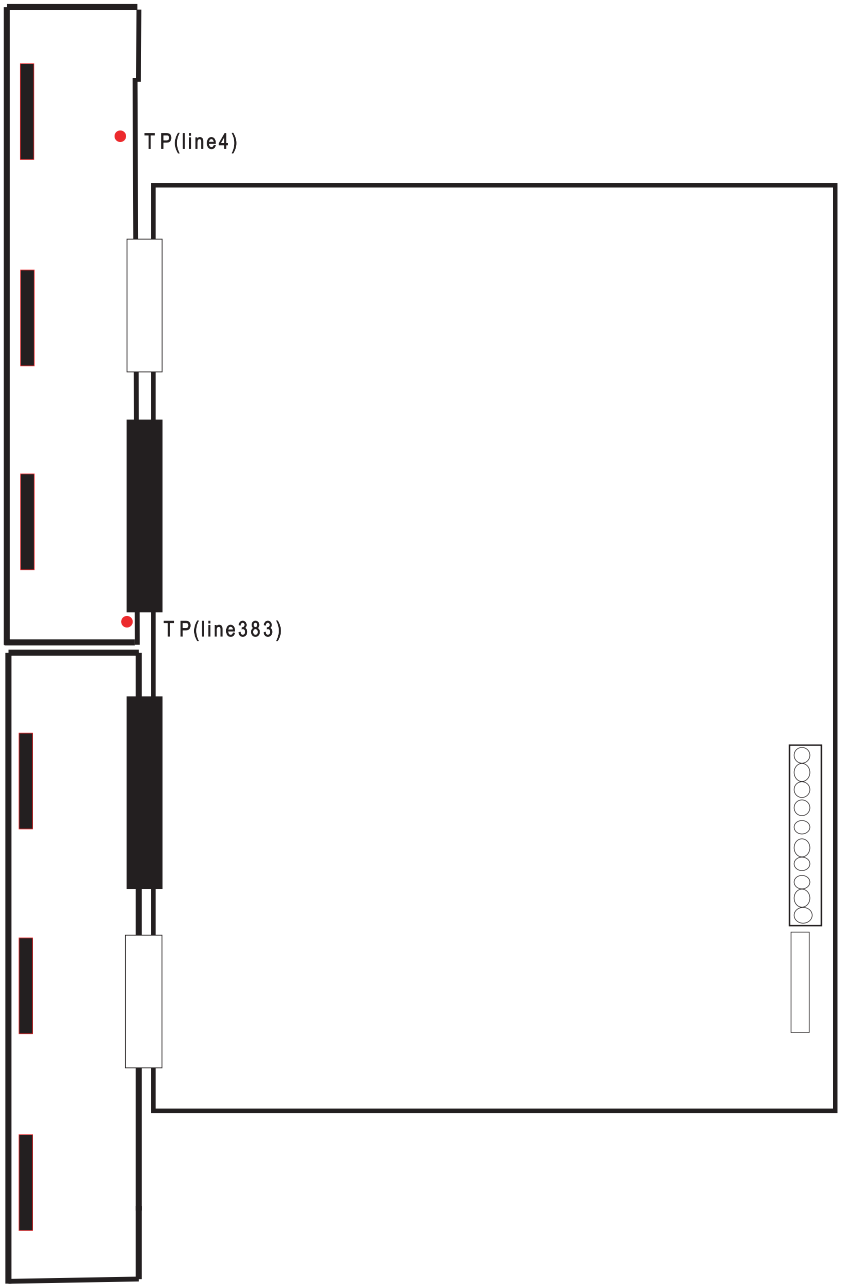
- In addition, the resistance between the points must be higher than a few kΩ .


CN5504
OUTL(5~24)
OULH(1~4)
OUTL(35~38)
CN5404
OUTL(17~34)

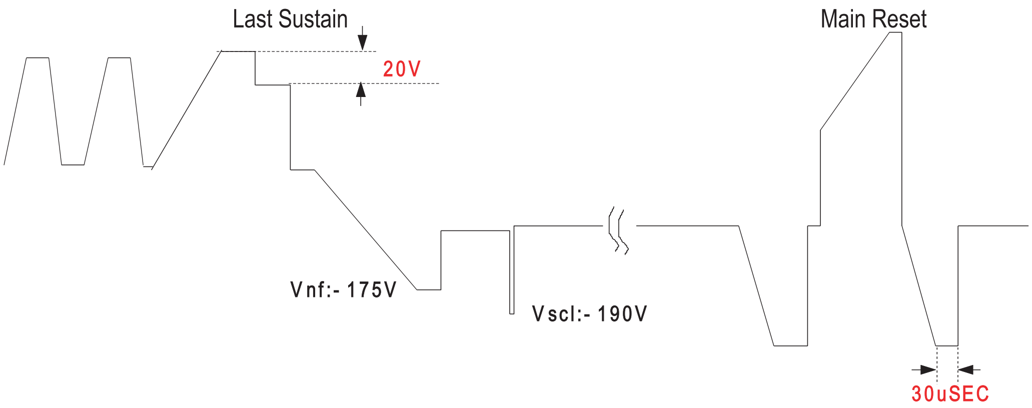
Y-Buffer(Low)   Y-Buffer(UP)

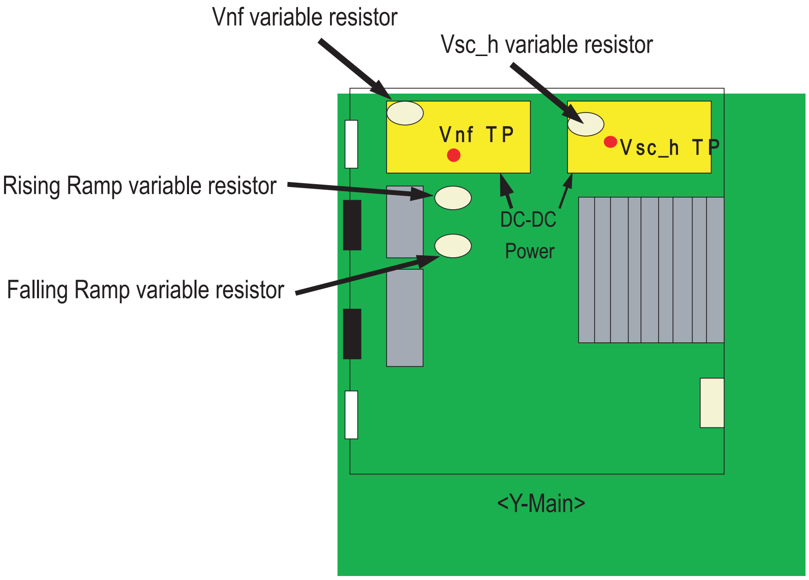
2) Y Main

- Connect the Y Main and Y Buffer, and confirm that the output from TP (line4, line383) of the Y Buffer UP is the same as #Attachment 1 when the power is supplied.



▶ Adjust the drive waveform so that the last sustain (rising: 15V) and the main reset (falling: 30usec) are the same as those in the figure.




Vnf variable resistor
Vsc_h variable resistor
Vnf TP
Vsc_h TP
Rising Ramp variable resistor
DC-DC
Power
Falling Ramp variable resistor
<Y-Main>

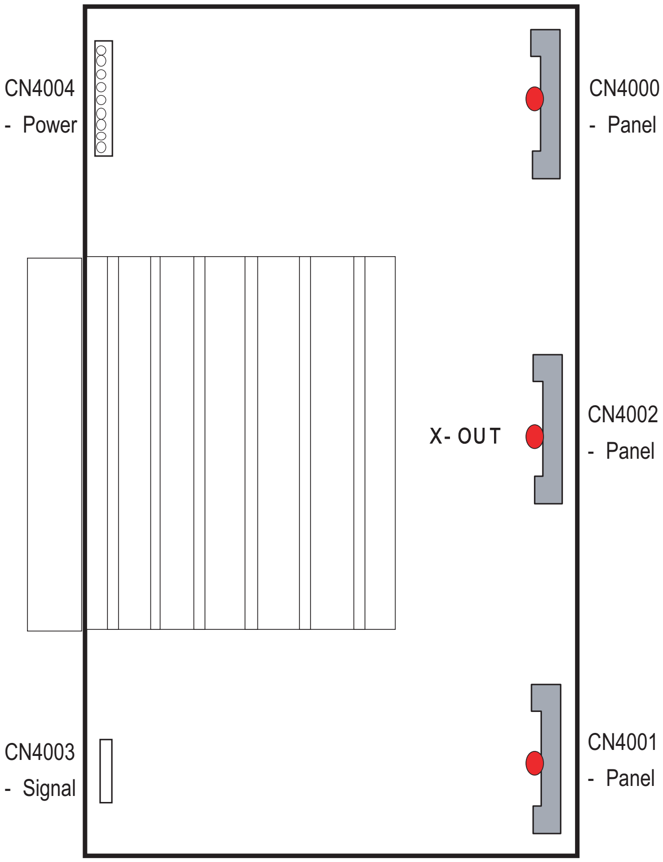
※ The Vsc_h and Vnf voltages are controlled by the DC-DC power part of the Y Main board.

<Voltage Adjustment Specifications>

Vset	Vs	Vsc_l	Vsc_h	Ve	Va	Vnf
195V	210V	-190V	-70V	100V	70V	-175

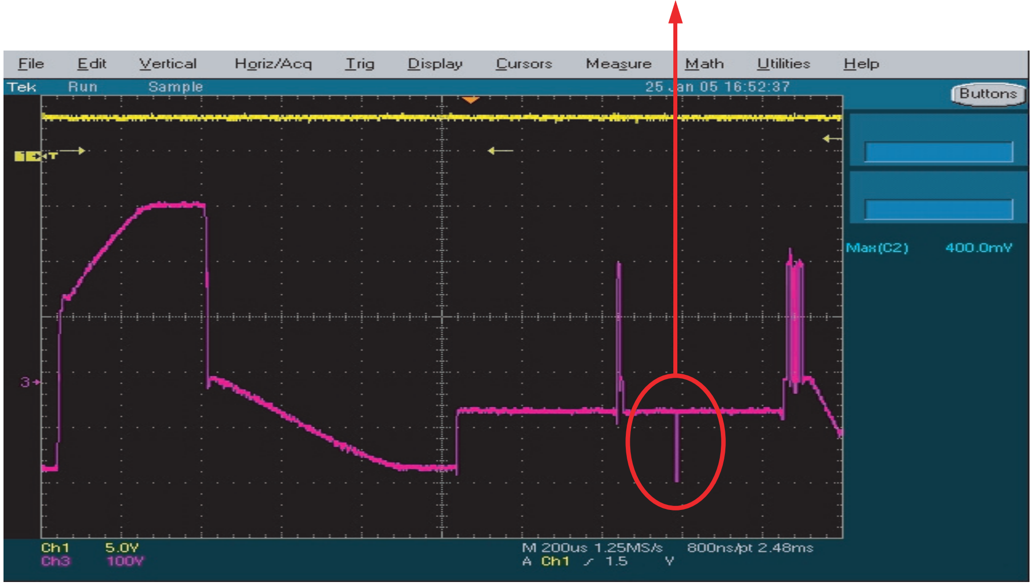
3) X

- Check that the output of X-Out of the X board follows the waveform of #Attachment 2 when the power is supplied.

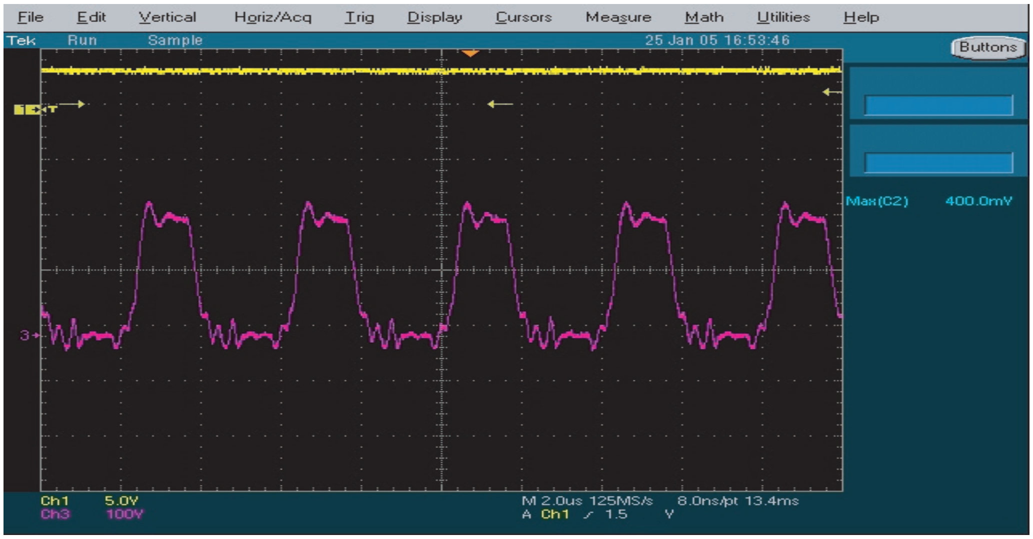

CN4004
- Power
CN4000
- Panel
X- OUT
CN4002
- Panel
CN4003
- Signal
CN4001
- Panel

※ Attachment 1

■ Y Output Waveform


The Scan Waveform Must Be Observed
File
Edit
Vertical
Horiz/Acq
Trig
Display
Cursors
Measure
Math
Utilities
Help
Tek
Run
Sample
25 Jan 05 16:52:37
Buttons
Max(C2)
400.0mV
3
Ch1 5.0V
Ch3 100V
M 200us 1.25MS/s 800ns/pt 2.48ms
A Ch1 ⌿ 1.5 V

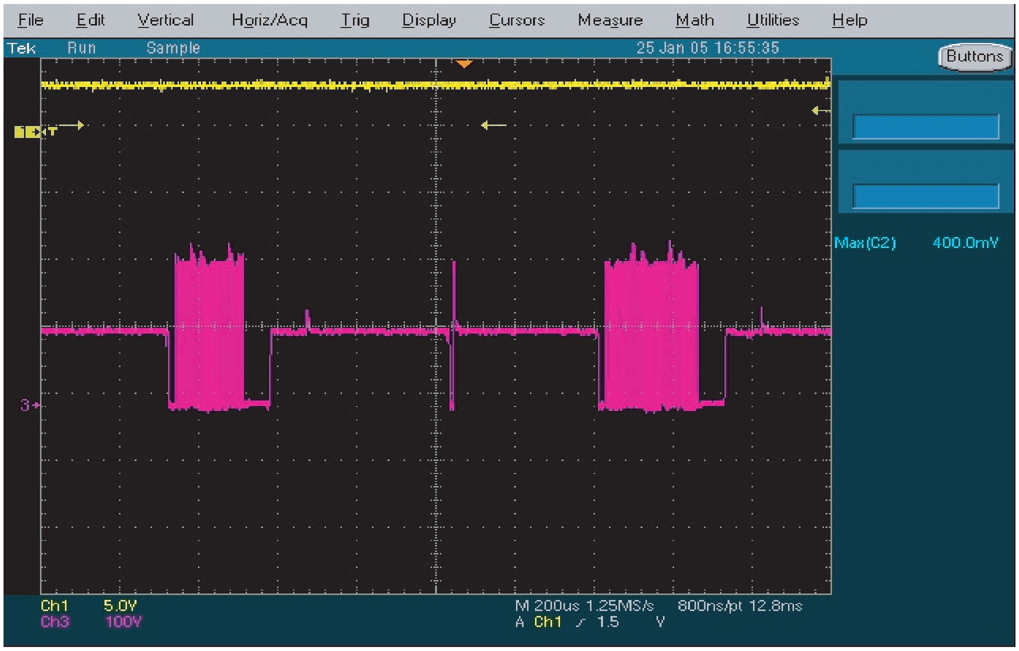
Y Output Waveform (200us/div, 100V/div)


File
Edit
Vertical
Horiz/Acq
Trig
Display
Cursors
Measure
Math
Utilities
Help
Tek
Run
Sample
25 Jan 05 16:53:46
Buttons
Max(C2)
400.0mV
3
Ch1 5.0V
Ch3 100V
M 2.0us 125MS/s 8.0ns/pt 13.4ms
A Ch1 ⌿ 1.5 V

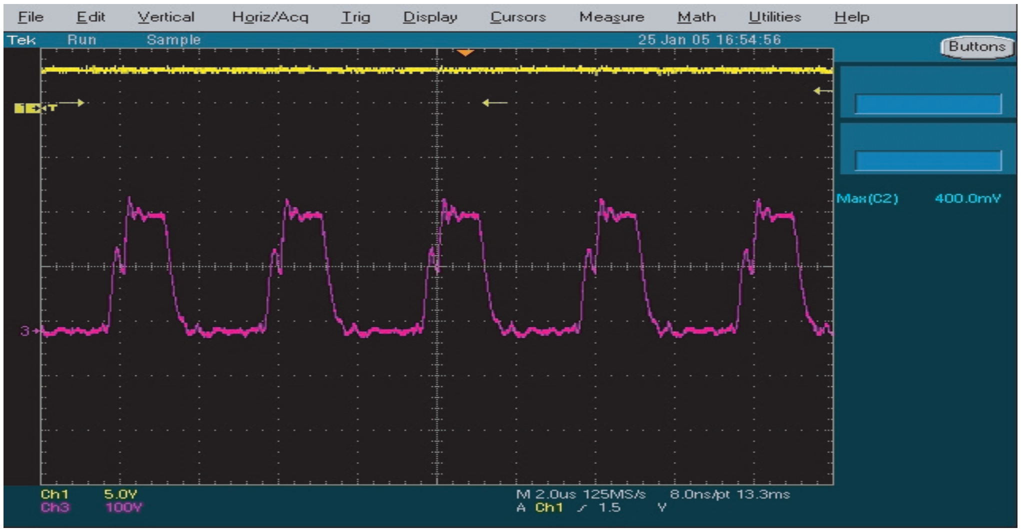
1us/div, 100V/div (Sustain Waveform)

※ Attachment 2

■ X Output Waveform


File Edit Vertical Horiz/Acq Trig Display Cursors Measure Math Utilities Help
Tek Run Sample
25 Jan 05 16:55:35
Buttons
Max(C2) 400.0mV
Ch1 5.0V
Ch3 100V
M 200us 1.25MS/s 800ns/pt 12.8ms
A Ch1 ⟋ 1.5 V

X Output Waveform (200us/div, 100V/div)


File Edit Vertical Horiz/Acq Trig Display Cursors Measure Math Utilities Help
Tek Run Sample
25 Jan 05 16:54:56
Buttons
Max(C2) 400.0mV
Ch1 5.0V
Ch3 100V
M 2.0us 125MS/s 8.0ns/pt 13.3ms
A Ch1 ⟋ 1.5 V

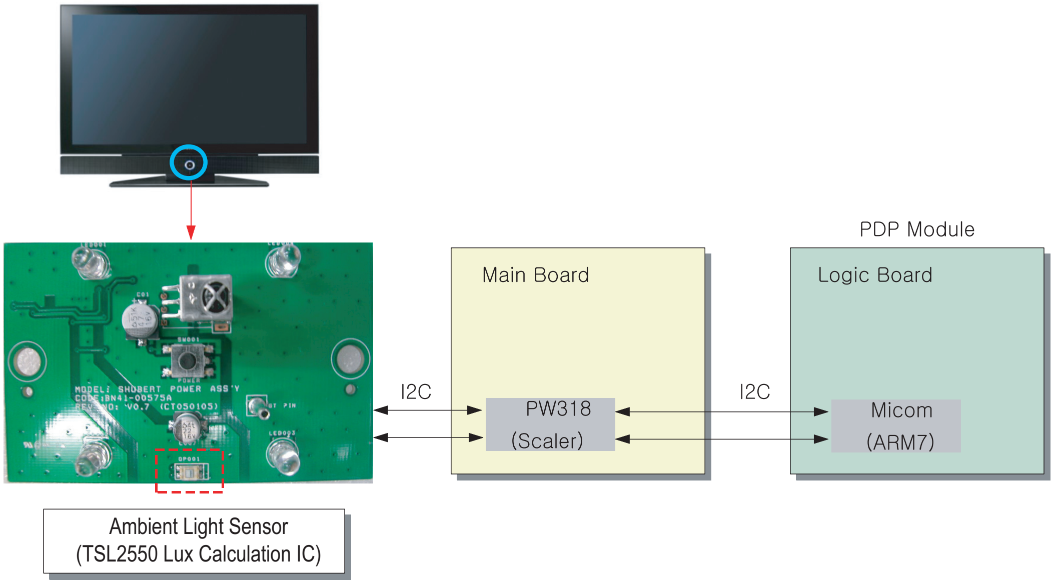
2us/div, 100V/div (Sustain Waveform)

13-3 New Circuit Description

13-3-1 Power Saving Modes (Standard, Automatic, Super Power Saving)

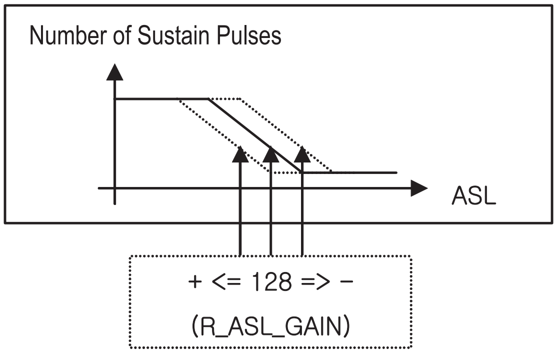
1. Objective
To enhance a sensible visual quality by maintaining an appropriate screen brightness according to the ambient brightness and to reduce power consumption.

2. Circuit Architecture



The CPU PW318 of the Video Board takes the current ambient brightness (in Lux units), stored in the Ambient Light Sensor of Power Assy., which is attached at the front of the PDP, at given intervals through SMBUS communication (identical to I2C) and controls the PDP module to operate with the appropriate illuminance. The I2C bus is used to communicate with the PDP module, and the communication method is the same as the existing communication method.

3. Descriptions of Each Mode
  1) Standard Mode
    Standard Mode is set as standard visual quality.
  2) Auto Power Saving Mode (Ambient Light Sensor)
    This uses the TAOS 4 pin TSL2550 and is currently being used in LCD TVs. It also uses SMBUS, which is the same type as I2C, for communication. The Ambient Light Sensor can detect up to 1846 Lux in normal mode. The data of the sensor can be measured for Lux operations once every 800ms.
    Control is implemented by using R_ASL_GAIN. The number of sustain pulses moves left or right as shown in the figure on the right. For a low gradation condition, the change by R_ASL_GAIN has been minimized considering the degradation of the visual quality. That is, the Auto Power Saving mode screen controlled by the ambient light sensor aims at normal video of medium gradation.



※ The following values are for a normal air signal with 80 Watt attenuation at maximum

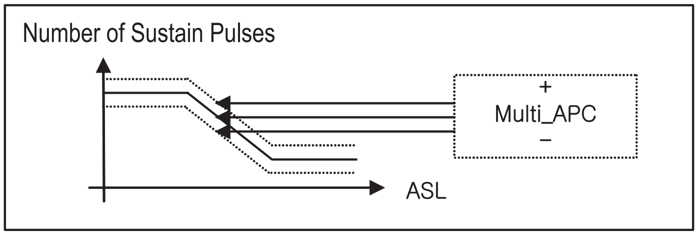
Detected Lux	R_ASL_GAIN (Address 0xE9)	Remarks
0 ~ 8	250	- Read the Lux value once per second and change it the target R_ASL_GAIN value by 5 per second according to the changed Lux value. - If more than 3 communication errors or saturation (count1>count0) is detected, the default value is set (R_ASL_GAIN=128).
9 ~ 22	210	
23 ~ 35	170	
Else	128 (default)	

3) Super Power Saving Mode

This uses the Multi APC function of the PDP module, and aims at reducing power consumption more than 100 W for the white pattern, which is similar to the power consumption reduction of other manufacturers.

- Concept of Multi APC

: Controls the number of sustain pulses according to the ASL (Average Signal Level) by R_P_Lower_Gain value.
In the PDP Logic, R_Multi_APC is set to 0X01, Multi_APC operates, and R_P_CM_Gain_SW is set to 0X01 so that the upper and lower limits of the APC Table can be shifted by adjusting the R_P_Lower_Gain value only.
Therefore, the sustain pulse is controllable for the white pattern, even though it was formerly not controllable.



※ Caution: The Super Power Saving Mode screen is darker than that of Standard Mode.

MEMO

14. Reference Information

14-1 Other issues related to other products

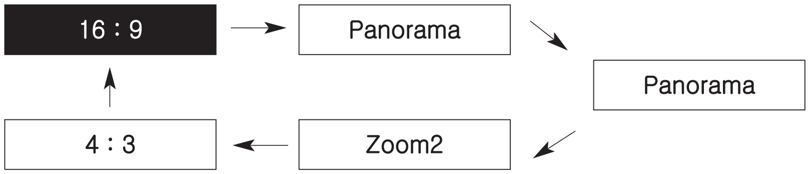
Problem	Descriptions
A fixed screen can cause permanent damage to the TV Braun tube.	Braun, PDP and LCD TVs can all be damaged. When a still image is displayed in a sequence, this can leave stains or after-images due to the characteristics of the panel. However, the DLP TV has the advantage that no stains or after-images are left on the screen. The DLP TV has mirror pixels on the DMD panel that project the beam onto the screen, in which the mirror is a digital representation of 0s and 1s, leaving no trace of light. The mirror returns to a blank state so that no stains or after-images are left.
Length of DVI Cable / PC RGB Cable	- A too long DVI cable may cause a malfunction or degradation of the visual quality due to an attenuation of the signal. There is no recommendation for the cable length at present. In general, although a cable length of up to 5 meters should work, please check if video is properly displayed on the screen after connecting. If you think the length of the cable is longer than for normal use, check the visual quality of the video on the screen and shorten the length, if necessary. - This also applies to the PC RGB (D-Sub) cable. When the length of the cable is longer than for normal use, video may not be displayed on the screen. In this case, shorten the cable length.
When a digitally distributed TV user receives HD-rated broadcasts:	The digital distributed TV (Ready Technique) can render HD sources as HD-rated. However, you need to install a set-top box for this purpose. The digital TV alone cannot render HD broadcasting as HD-rated. Install the formal set-top box for HD broadcasts.
When a digital distributed TV user selects normal size (4:3) to receive SD-rated digita broadcasts:	The digitally distributed TV (Ready Technique) renders any broadcasting service as SD-rated. However, when connected to a set-top box, the digital TV renders HD broadcasts as HD-rated and renders SD as SD-rated. The screen size is scaled to 4:3.
When a digitally built-in TV user receives SD (air) broadcasting:	The digitally integrated TV ("built-in" type) renders SD broadcasting as SD-rated. This can be understood easily. Even a high-resolution TV cannot improve a low resolution picture into high quality. In contrast, an SD-rated TV cannot represent HD broadcasting as HD because the resolution of the TV is lower than the original.
When selecting a picture size of 4:3 in connection with a computer or a multimedia device:	The representation capability of SD or HD-rated depend entirely on the TV set. The HD TV can render HD broadcasting as HD-rated only when it receives HD sources. In the meantime, the HD TV renders SD as SD-rated when it receives SD sources. The picture size has nothing to do with the resolution; TV models like SVP-XXL3HD or SVP-XXL6HD have a size adjustment feature to 16:9, 4:3, Panorama, Zoom1, Zoom2 and Auto Wide. This is about the aspect ratio of the top and bottom boundaries to the overall screen and users can select their preference.

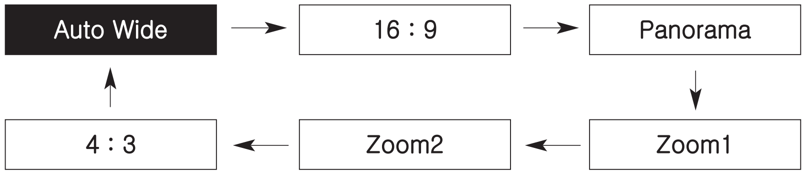
■ SD/HD broadcasts and the TV's display capability are related

1. A digital broadcast should be transmitted in wide screen (an aspect ratio of 16:9) HD. If the broadcasting station converts a conventional program created in normal screen (aspect ratio of 4:3) into a digital signal and broadcasts the signal, the left and right of the picture will not be displayed.
   This symptom also appears in other manufacturer's TV's. The three appliance companies are trying to resolve the problem through the Ministry of Information and Communication.
   * When watching an SD (normal) broadcast through a Digital (Wide) TV (480P normal broadcast)
   * When watching an SD (normal) broadcast through a Digital Ready (Wide) TV (Using a set-top-box)
   * When watching an analog (normal) broadcast through a wide TV
     (When watching a broadcast after changing the aspect ratio of the TV from 16:9 (wide screen) to 4:3)

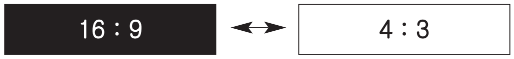
2. When watching a DVD title or video tape in wide screen (21:9) through a wide (16:9) TV, watching video from a computer or game console by selecting the aspect ratio to 4:3, or watching video from a DVD, VCR, computer or game console through a wide TV by selecting the aspect ratio to normal (4:3) or wide (21:9), the left and right, or top and bottom of the picture will not be displayed.
   This symptom appears in other manufacturer's TV's. The three appliance companies are trying to resolve the problem through the Ministry of Information and Communication.

■ Changing the Order of the Picture Size for 16:9 Display Devices





■ Changing the Order of the Picture Size for DTV 1080i/720p Sources



■ Restrictions

1. When you want to change the picture size in PIP 'ON', you must turn the PIP off before changing the size.
   However, you can change the main picture size even in PIP ON for products with no restrictions.

2. When the picture size is not Normal (4:3 for 4:3 display devices, 16:9 for 16:9 display devices) and you turn PIP on, the picture size is changed to Normal.
   However, you can turn PIP on without changing the picture size for products with no restrictions.

3. In the OSD notation for the picture size, 16:9 is represented as "Wide" instead of "16:9" for devices other than with 16:9 dis plays.
   Ex: For LCD 15:9 devices, "Wide" is displayed on the OSD instead of "16:9".

4. The picture size can be changed even in the blue screen.
   However, the picture size should be controlled by the product specifications if the change is impossible due to hardware restrictions.

14-2 Technical Terms

Virtual Channel
In digital channels, a virtual channel is used. A virtual channel is a function that enables users to watch a channel by selecting a virtual channel number regardless of the region of the user. Run Auto Channel Scan for digital broadcasts, tune in to a UHF channel number according to the region for terrestrial broadcasts, or tune into a channel number allocated by the cable broadcasting station for a cable TV network, and then select a displayed virtual channel.
For example, even if you tune into channels UHF 14(MBC), 15(KBS1), 16(SBS), 17(KBS2) and 18(EBS) broadcast from Kwanak mountain in Seoul, you can watch the channels using virtual channels such as 11-1(MBC), 9-1(KBS1), 6-1(SBS), 7-1(KBS2) and 10-1(EBS) regardless of your region and the actual local channel number. The virtual channel numbers may be used nationwide, but the virtual channel numbers may vary depending on the local broadcasting stations.
(Since the digital channel numbers may vary depending on your region and can be changed by the broadcasting policy, ask your local broadcasting station or regional cable TV network company about the channel numbers.) If the virtual channel numbers are saved and the TV set can receive digital broadcasting, you can watch a digital channel by pressing the DTV+ button and pressing the first two digits of the corresponding virtual channel number.

Custom Color Adjustment
Using this function, a user can adjust the color according to personal preferences (Red, Grass-Color, Sky-Color, Gold-Color, Skin-Color, White, Standard, Custom) without affecting other colors using automatic selection mode or fine adjustment mode.

Simultaneous Screen
Using this function, a user can view two video signals from separate video sources on a single screen at the same time. For example, you can watch TV and video simultaneously.

Dolby Digital
This is the digital sound standard developed by the Dolby Laboratory. You can select your preferred digital surround mode after connecting external speakers.

Digital Broadcasting
Digital Broadcasting is a television broadcasting signal digitized and transmitted according to the United States' terrestrial digital broadcast standard, or ATSC.

Mono
A type of audio interface that transmits the audio signal through a single channel only.
Through a mono interface, it is hard to experience stereophonic sound and the sound is played using only one speaker.

Reception Sensitivity Amplification (LNA)
A signal amplification technique that amplifies a weak broadcasting signal by applying satellite technology to provide better visual quality even for users in regions where only a weak broadcasting signal is available. (LNA: Low Noise Amplifier)

Sub Woofer
A Sub Woofer is a speaker for ultra bass sound output only whose frequency is as low as 150Hz. There are two types: an active type which includes an amplifier, and a passive type, which requires an additional amplifier.

Stereo
A type of audio interface that transmits audio signal through 2 channels.
Stereo transmits audio signals for right and left sound so that you can experience stereophonic sound, and the sound is played through 2 speakers.

Partial Color Blind Person Mode
Using this function, a user can adjust the red, green or blue colors according to the preferences of the partially color-blind person so that he or she can view the clearest possible picture on the screen.

Analog Broadcasting
Analog Broadcasting is a television broadcasting signal transmitted according to the NTSC standard.

ANTENNA IN Port
The port connecting the TV aerial via a coaxial cable. It is generally used for watching public broadcast programs.

English Caption
A function that displays English captions or text information included in the broadcast signal or video tape. You can use this function for your English studies by watching AFKN or CC marked video tapes.

Video/Audio Ports
You may experience poor visual and audio quality when watching a video tape on channel 3 or 4 through the antenna cable. You can experience better visual and audio quality by connecting the TV and VCR through the Video/Audio ports. The video port is in yellow, and the audio ports are in white and red.

Wide Screen
Wide Screen refers to a screen that is horizontally longer than a conventional TV screen.
While the aspect ratio of a normal TV is 4 : 3, that of a wide screen is 16 : 9.

External Input
External Input is a connected video device such as a VCR, camcorder, DTV receiver, DVD, etc. as a video source.

Satellite Broadcasting
Satellite Broadcasting transmits programs via satellite so that a program can be viable in all areas at a high visual and sound quality. Approximately 100 channels including public broadcast channels are provided. To view a satellite broadcast, you have to install an additional receiver.

Wire Broadcasting
Wire Broadcasting refers to movie, entertainment and educational programs transmitted by a broadcasting station within a hotel or school.

Audio Multimix
Audio Multimix provides 2 audio languages when foreign movie, drama, news, etc. are broadcast. You can select and listen to one of the supported languages or you can select and listen to both languages simultaneously.

After-Image Protection
Using this function, a user can configure the options necessary for protecting the PDP TV screen.

Power Saving Mode
This function adjusts the screen brightness according to the ambient brightness so as to conserve power.

Component Port
The Component Port transmits a separate luminance signal as well as the green, blue, and red color signal and provides the best quality of all video connection types.

Cable Broadcasting
Cable Broadcasting transmits programs via cable instead of via the air. To view cable broadcasting, you have to subscribe to your local cable broadcast service provider and install an additional receiver.

Tuner
A device that enables the selecting of specific channel frequencies for TV or radio.

Panorama Screen
This refers to a screen that corrects the picture distortion due to a screen size mismatch on the TV.

Progressive Scan
Progressive scan displays the entire frame in a single sweep so as to provide clearer and sharper visual quality.

Anynet
Anynet is an AV network system that enables an easy-to-use AV interface for users by controlling all connected AV devices through the Anynet menu when the AV devices of Samsung Electronics are connected.

DVD (Digital Versatile Disc)
DVD is a large capacity storage media that can store multimedia content such as video, games, audio applications, etc. using MPEG-2 video compression technology on a CD sized disc

DRC
This is a sound quality enhancement function that automatically controls audio output so as to prevent sound quality distortion even at loud volumes and correct the sound to the speakers so that you can listen to the sound at the original sound quality.

DVI (Digital Visual Interface) Port
A DVI interface is a standard for high definition television connectivity. It provides a clear picture on the screen using TMDS which minimizes video signal loss.

DVI-D Cable
A type of DVI connector. Using this cable you can only transmit digital signals.

DVI-I Cable
A type of DVI connector. Using this cable you can transmit either digital or analog signals.

HDMI
HDMI (High-Definition Multimedia Interface) is the first industry-supported, uncompressed, all-digital audio/video interface. HDMI provides an interface between any audio/video source, such as a set-top box, DVD player, and A/V receiver and an audio and/or video monitor, such as a digital television (DTV). HDMI supports standard, enhanced, or high-definition video, plus multi-channel digital audio on a single cable. It transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements.

PCM
PCM (Pulse Coded Modulation): This refers to an uncompressed digital signal. Use this for an AV amplifier that does not support 5.1 channels when connecting the audio output via optical or coaxial cable.

SRS TruSurround XT
This function provides 5.1 channel surround sound using 2 channel speakers when inputting a stereo audio signal.

VESA Plug & Play

This function enables the automatic recognition of devices when connecting the TV to the computer without additional settings.

S-VIDEO IN Port

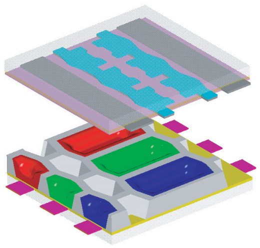
This is called super video. S-Video is a type of video signal which has the video luminance and the color signal separated in order to provide better visual quality.

VHF/UHF

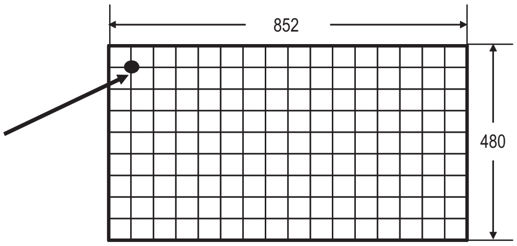
VHF refers to TV channels 2 to 13, and UHF refers to TV channels 14 to 69.

Pixels, Resolution

The pixels are the number of small dots that make up the TV screen. The resolution represents the number of pixels on a screen. For example, if the resolution of a TV is 852x480, it means the width of the screen consists of 852 pixel columns and the height of the screen consists of 480 pixel rows. In this case, the total number of pixels on the screen is 408,960. The more pixels there are, the higher the visual quality that can be achieved because the picture on the screen is displayed with more pixels and therefore with more detail.



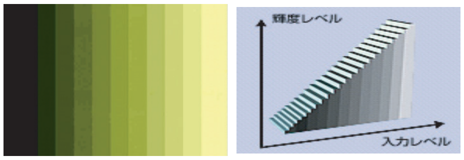
1 Pixel = 3 Sub Pixel(R+G+B)

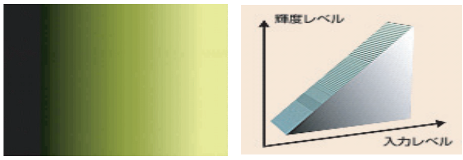


42SD = 409K Pixels

Gradation, Color Depth

Gradation describes the number of gradual brightness levels. Since all information is represented by binary numbers in a digital system, the Gradation is determined by the number of bits used to represent the brightness levels of a pixel on the TV screen. For example, if a pixel is represented by 8 bits, the Gradation is 28 or 256. Since a TV uses the three primary colors of light, R, G and B, the number of possible colors for a pixel is 256 x 256 x 256, 16,777,216, or 16.7 million colors. If 12 bits are used for a pixel, the gradation is 212 or 4096 for a color. Since three colors R, G and B are used, 4096 x 4096 x 4096 or 68.7 billion colors are supported per pixel. Since 68.7 billion colors are far more than 16.7 million colors, the picture will be displayed by far more abundant and natural colors using a 12 bit pixel. That is, since Gradation means the number of brightness levels, color represented by 4096 levels appears more natural than color represented by 256 levels.





Contrast

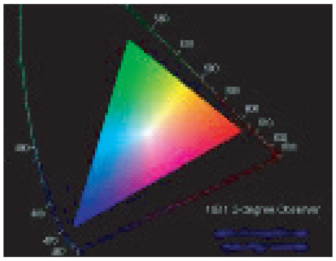
The contrast is the ratio of brightness of the brightest color to the darkest color. The contrast is calculated by dividing the brightness of the brightest color by the brightness of the darkest color. For example, if the brightness of the darkest color is 1 and the brightness of the brightest color is 3000, then the Contrast is 3000/1 or 3000. A higher contrast means that a dark color is displayed darker and bright color is displayed brighter so that the screen contrast can be easily distinguished. The contrast differs from the Gradient which means the number of brightness levels.
Therefore, if someone says that a 5000:1 contrast displays a color by 5000 levels, he is confusing Contrast with Gradation.

Brightness

Brightness is the brightness per unit screen area, the unit for brightness is candela (cd). For example, 1000cd/m2 means the brightness that is measured when 1000 candles are lit within 1 square meters area.

Color Reproductivity

Each color displayed on the TV screen is implemented by a pixel on color coordinates which have an X and Y axis. For example, when a pixel on the X coordinate 0.65 and the Y coordinate 0.74 is displayed as a color and it becomes visible on the TV screen. While the possible color coordinate area is very wide, the color coordinate area of the signal broadcast from a broadcast station is smaller than that of possible color coordinates. Moreover, a TV provides a smaller color coordinate area than that of the signal from the broadcasting station even though the size of the color coordinate area varies depending on the TV model. In general, Color Reproductivity is used as follows:



The Color reproductivity of a TV is a certain % of NTSC. This means the TV displays that particular % of the color coordinate area of the NTSC signal broadcast by the broadcasting station. In general, a CRT TV provides the highest functional color reproductivity.

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Printed in Korea
AA82-04281A